April, 1947

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PUBLISHED MONTHLY BY EDISON ELECTRIC INSTITUTE

# THE ELECTRIC LIGHT AND POWER INDUSTRY

*Current Statistical Data Covering 100 Per Cent of Industry*

*For 12 Months Ending December, 1945-1946*

## SOURCE AND DISPOSAL OF ENERGY—12 MONTHS ENDING DECEMBER 31

| | 1946 | 1945 | % |
|---|---|---|---|
| **GENERATION* (Net)** | | | |
| By Fuel Burning Plants | 144,722,131,000 | 142,516,673,000 | + 1.5 |
| By Water Power Plants | 78,369,861,000 | 79,917,308,000 | − 1.9 |
| **Total Generation** | **223,091,992,000** | **222,433,981,000** | **+ 0.3** |
| Add—Net Imports Over International Boundaries | 1,666,069,000 | 1,771,179,000 | − 5.9 |
| Less—Company Use | 1,551,845,000 | 1,510,781,000 | + 2.7 |
| Less—Energy Used by Producer | 2,938,204,000 | 1,877,771,000 | ..... |
| **Net Energy for Distribution** | **220,268,012,000** | **220,816,608,000** | **− 0.2** |
| Losses and Unaccounted for | 29,473,130,000 | 27,258,593,000 | + 8.1 |
| **Sales to Ultimate Customers** | **190,794,882,000** | **193,558,015,000** | **− 1.4** |

## CLASSIFICATION OF SALES

| | | | |
|---|---|---|---|
| **NUMBER OF CUSTOMERS (December 31st)** | | | |
| Residential or Domestic | 29,769,107 | 28,116,998 | + 5.9 |
| Rural (Distinct Rural Rates) | 1,381,291 | 1,234,441 | +11.9 |
| Commercial or Industrial: | | | |
| Small Light and Power | 4,692,850 | 4,398,184 | + 6.7 |
| Large Light and Power | 174,662 | 162,338 | + 7.6 |
| Street and Highway Lighting | 26,446 | 25,607 | + 3.3 |
| Other Public Authorities | 94,643 | 92,144 | + 2.7 |
| Street and Interurban Railways | 163 | 180 | − 9.4 |
| Electrified Steam Railroads | 31 | 31 | ..... |
| Interdepartmental | 1,098 | 1,150 | − 4.5 |
| **Total Ultimate Customers** | **36,140,291** | **34,031,073** | **+ 6.2** |
| **KILOWATTHOUR SALES** | | | |
| Residential or Domestic | 38,570,913,000 | 34,183,915,000 | +12.8 |
| Rural (Distinct Rural Rates) | 4,430,511,000 | 3,668,444,000 | +20.8 |
| Commercial or Industrial: | | | |
| Small Light and Power | 33,016,463,000 | 30,438,403,000 | + 8.5 |
| Large Light and Power | 98,884,506,000 | 107,489,970,000 | − 8.0 |
| Street and Highway Lighting | 2,272,301,000 | 2,183,780,000 | + 4.1 |
| Other Public Authorities | 5,854,440,000 | 7,589,263,000 | −22.9 |
| Street and Interurban Railways | 4,514,511,000 | 4,683,235,000 | − 3.6 |
| Electrified Steam Railroads | 2,632,069,000 | 2,670,891,000 | − 1.5 |
| Interdepartmental | 619,168,000 | 650,114,000 | − 4.8 |
| **Total Kilowatthour Sales** | **190,794,882,000** | **193,558,015,000** | **− 1.4** |

## RESIDENTIAL OR DOMESTIC SERVICE

| | | | |
|---|---|---|---|
| **AVERAGE CUSTOMER DATA—for 12 months ended December 31st** | | | |
| Kilowatthours per Customer | 1,329 | 1,229 | + 8.1 |
| Average Annual Bill | $42.79 | $41.91 | + 2.1 |
| Revenue per Kilowatthour | 3.22¢ | 3.41¢ | + 5.6 |

(*) By courtesy of the Federal Power Commission.

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EDISON ELECTRIC INSTITUTE BULLETIN

Volume 15 . APRIL, 1947 No. 4

# To Those Planning to Attend the EEI Convention

ALL arrangements for the 15th Annual Convention of the Edison Electric Institute, to be held at Atlantic City, June 2-5, have been completed and the detailed program together

P. H. POWERS
*Chairman, Convention Program Committee*

with a condensed timetable of events appears on the following pages. It is suggested that you refer to the timetable on the next page in advance of your arrival at Atlantic City so that you will not overlook any of the important events.

Atlantic City hotels report that room reservations are pouring in from all sections of the country, indicating that all previous attendance records at Edison Electric Institute Conventions will be broken this year. If you have not yet made your hotel reservations, it is advisable that you do so at your earliest convenience in order to have a choice as to hotel and accommodations. Hotel reservation blanks and a brochure on the Convention may be obtained from the Secretary of the Institute, 420 Lexington Avenue, New York 17, New York.

The staff of the Atlantic City Electric Company, headed by N. M. Argabrite, President of the Company, and B. L. England, of the Convention Attendance Committee, have cooperated to the fullest extent in preparing for the Convention and we are assured that every effort will be made to provide for the convenience and comfort of those attending the Convention. The registration and information desks will also be at the service of delegates and all members of the Edison Electric Institute staff will be glad to extend all possible courtesies.

Charles E. Oakes, president of the Pennsylvania Power and Light Company and Chairman of the Convention Attendance Committee sends this message to the industry:

"June 2 to 5 is the most important business date on your 1947 calendar . . . the EEI convention in Atlantic City. This first Institute convention since prewar days promises not only to be the most significant meeting of the year in the electric industry, but the most important in EEI history.

"The 1947 keynote is the challenge of the future . . . and never before has it been so necessary for our industry's leaders to get together: 'What is ahead in our business where already the demands upon our facilities and the problems developing in our operations are greater than even in the most critical war years?' 'What are today's qualities of leadership?' 'Who in your company can shoulder tomorrow's responsibilities?'

"These four days will be absorbing, stimulating and significant days. Part of the time will be put to critical examination of our progress! Part will be put to remoulding our objectives! This 15th annual convention is not only of vital import to today's leaders but of valuable guidance for those now being groomed to fill the top ranks in coming years.

"Interest in the convention is running high! We are most enthusiastic about

CHARLES E. OAKES
*Chairman, Convention Attendance Committee*

the program and anticipate a splendid attendance record. The day-by-day convention plans are highlighted in the accompanying program. We will be looking for you along with the up-and-coming young men of your organization."

Here is some information you should have in advance of your arrival at Atlantic City:

**Registration**

*Monday, June 2* the Convention registration office will be open from 9:30 a.m. until 5:00 p.m. in the main lobby of the *Traymore Hotel*. On *Tuesday, Wednesday* and *Thursday* the registra-

tion office will be located in the Atlantic City Convention Hall. Registration from 9:00 a.m. until 4:00 p.m. June 3 and 4, and from 9:00 a.m. until 12:00 p.m. June 5. Convention programs and identification slips will be issued at the registration office. Please register as promptly as possible after checking in at your hotel.

### Location of Meetings

The five general sessions of the Convention and the Wednesday evening session will be held in the Atlantic City Convention Hall.

Sessions and meetings sponsored by the various Committees on Monday, June 2, will be held in the Traymore Hotel. Full information on these meetings will appear in the Convention Program.

### Convention Daily

The Convention Daily, to be published through the courtesy of the *Electrical World* will report the Business sessions, carry general news, calendar of events and official notices. The Convention Daily will also publish a Daily Registration List. It will appear on Tuesday, Wednesday and Thursday mornings.

### Special Train

In addition to the regular train service to and from Atlantic City, the Pennsylvania Railroad will run a special Convention train from Atlantic City to New York, about 4:00 p.m., Thursday afternoon, allowing for ample time to attend the Thursday luncheon meeting.

### The After Hours

For the after hours:

*Monday evening,* 7 p.m., Hotel Traymore. Informal get-acquainted buffet dinner in honor of President and Mrs. Neff. Hostesses will be the wives of the Institute's Board of Directors. Orchestra and dancing.

*Tuesday evening,* 5 p.m. to 7 p.m., Hotel Traymore. Cocktail party, Westinghouse Electric Corporation, host.

*Wednesday evening,* 5 p.m. to 7 p.m., Hotel Traymore. Cocktail party, General Electric Corporation, host.

*Wednesday night,* 9:15 p.m., Atlantic City Convention Hall.

Presentation of the Charles A. Coffin Award.

Phil Spitalny's All Girl, Hour of Charm Orchestra.

Mr. Spitalny conducting.

America's vast radio audience hears this fabulous All-Girl Orchestra each Sunday afternoon over the CBS Network, under the sponsorship of America's business-managed, tax-paying Electric Light and Power Companies. As a compliment to the Institute's 15th Annual Convention the Orchestra's noted maestro has prepared a special concert program for this occasion. All 50 girls of the orchestra, including Evelyn, concert mistress, and its galaxy of stars will be present in person.

### Particularly for the Ladies

Special luncheons in compliment to the ladies attending the Convention will be held as follows:

*Tuesday,* 12:30 p.m., at the Hotel Claridge, Bendix Home Appliances, Inc., host.

*Wednesday,* 12:30 p.m., at the Chalfonte-Haddon Hall, Sylvania Electric Products, Inc., host.

### The Meetin' House

All the Week—Meet old friends, make new ones at the Meetin' House, on the Hotel Traymore Terrace. Chairs and sofas for conversational groups—a comfortable get-acquainted atmosphere.

And now a word from Mr. Powers: "This is the first full scale electric industry Convention since 1940. Every business session is important."

—And from Mr. Neff: "I do not recall a program so potentially fruitful."

—And Mr. Oakes: "We will be looking for you along with the up-and-coming young men of your organization."

## CONVENTION TIME TABLE

All of the business sessions of the Fifteenth Annual Convention of the Edison Electric Institute will be held at the Atlantic City Convention Hall; committee meetings at the Hotel Traymore, social functions at several of the Atlantic City hotels and a concluding luncheon-meeting at the Hotel Traymore. The Convention time table follows:

**MONDAY, JUNE 2ND**

| | |
|---|---|
| 9:30 a.m. | Registration opens in main lobby of Hotel Traymore |
| 10:00 a.m. | Statistical Committee, Mandarin Room, Mezzanine, Hotel Traymore |
| 10:30 a.m. | Commercial Division General Committee, Rose Room, Mezzanine, Hotel Traymore |
| 10:30 a.m. | Industrial Relations Committee, Belvedere Room, 11th Floor, Hotel Traymore |
| 12:30 p.m. | Board of Directors' luncheon meeting, Mirror Room, 1st Floor, Hotel Shelburne |
| 2:00 p.m. | Accounting Division General Committee, Stratosphere Room, 8th Floor, Hotel Traymore |
| 2:00 p.m. | Engineering Division General Committee, Pine Room, Mezzanine, Hotel Traymore |
| 2:00 p.m. | Industrial Relations Committee, Belvedere Room, 11th Floor, Hotel Traymore |
| 2:00 p.m. | Insurance Committee, Chippendale Room, Mezzanine, Hotel Traymore |
| 2:00 p.m. | Rate Research Committee, Club Room, 10th Floor, Hotel Traymore |
| 7:00 p.m. | Informal Buffet and dance, American Room, Hotel Traymore |

**TUESDAY, JUNE 3RD**

| | |
|---|---|
| 9:00 a.m. | Registration opens in lobby, Atlantic City Convention Hall |
| 10:00 a.m. | First General Session, Ballroom, Atlantic City Convention Hall |
| 12:30 p.m. | Ladies' luncheon, Hotel Claridge, Bendix Home Appliance Inc., Host |
| 2:30 p.m. | Second General Session, Ballroom, Atlantic City Convention Hall |
| 5:00 to 7:00 p.m. | Cocktail party, American Room, Hotel Traymore<br>Westinghouse Electric Corporation, Host |

**WEDNESDAY, JUNE 4TH**

| | |
|---|---|
| 9:00 a.m. | Registration opens in lobby, Atlantic City Convention Hall |
| 9:30 a.m. | Third General Session, Ballroom, Atlantic City Convention Hall |
| 12:30 p.m. | Ladies' luncheon, Chalfonte-Haddon Hall, Sylvania Electric Products, Inc., Host |
| 12:30 p.m. | Board of Directors' luncheon meeting, Mirror Room, Hotel Shelburne |
| 2:30 p.m. | Fourth General Session, Ballroom, Atlantic City Convention Hall |
| 5:00 to 7:00 p.m. | Cocktail party, American Room, Hotel Traymore<br>General Electric Company, Host |
| 9:15 p.m. | Ballroom, Atlantic City Convention Hall<br>Presentation of Charles A. Coffin Award<br>Phil Spitalny's All-Girl Hour of Charm Orchestra<br>Mr. Spitalny conducting |

**THURSDAY, JUNE 5TH**

| | |
|---|---|
| 9:00 a.m. | Registration opens in lobby, Atlantic City Convention Hall |
| 9:45 a.m. | Fifth General Session, Ballroom, Atlantic City Convention Hall |
| 1:00 p.m. | Luncheon meeting, American Room, Hotel Traymore |

# MONDAY, JUNE 2

*Convention delegates and guests are cordially invited to attend as many of the open meetings of Committees as the time schedule will permit.*

## ACCOUNTING DIVISION GENERAL COMMITTEE

**2:00 P.M.—Stratosphere Room, Hotel Traymore**
**H. P. TAYLOR, *Chairman*, presiding**

Significance of proposal to revise reports to regulatory commissions to show depreciation reserve as a deduction from utility plant.
Is the rise in price level approaching the stage where concerted action by utility accounts could protect investors?
When and to what extent should consideration be given to revising the NARUC-FPC uniform system of accounts for electric utilities.
Current Federal income tax developments.
How research has lowered the sights on what the depreciation reserve requirement would be on utility plant.
Discussion of committee activities.

## COMMERCIAL DIVISION GENERAL COMMITTEE

**10:30 A.M.—Rose Room, Hotel Traymore**
**RALPH P. WAGNER, *Chairman*, presiding**

Report of the activities of the Commercial Division on the Planned Lighting Program, the Sales Training Program, the Heat Pump Commercial Electric Cooking, the activities of the Agricultural, Industrial, Residential and Commercial Sections and other important subjects.

## ENGINEERING DIVISION GENERAL COMMITTEE

**2:00 P.M.—Pine Room, Hotel Traymore**
**P. H. CHASE, *Chairman*, presiding**

Report of the activities of the several engineering committees.
Joint use of long span farm lines for power and telephone service and the use of telephone carrier.
Progress report on the work of the EEI-AEIC Joint Committee on Branch Circuit Protection.

## INDUSTRIAL RELATIONS COMMITTEE

**10:30 A.M. and 2:00 P.M.—Belvedere Room, Hotel Traymore**
**H. K. BRECKENRIDGE, *Chairman*, presiding**

"Collective Bargaining Patterns in 1947"—Discussion Leader, S. L. HALL, Vice President, The Cleveland Electric Illuminating Company.
Entire morning session from 10:30 to 12:30 reserved for this discussion.
"Recent Experience With Arbitration of Utility Cases"—(Speaker to be announced.)
"Federal and State Legislation Affecting Utility Labor Relations"—S. F. LEAHY, Director of Employee Relations, The Detroit Edison Company.
"Review of Industrial Relations Committee Activities Over the Past Few Years, and Suggestions for Committee Activities in the Year Ahead"—H. K. BRECKENRIDGE, Assistant to the President, West Penn Power Company.
(Attendance limited to Management Representatives of Edison Electric Institute Member Companies.)

## INSURANCE COMMITTEE

**2:00 P.M.—Chippendale Room, Hotel Traymore**
**J. H. NICKELL, *Chairman*, presiding**

Insurance matters of current interest and organization of the program for future work.

## STATISTICAL COMMITTEE

**10:00 A.M.—Mandarin Room, Hotel Traymore**
**WINSOR MARTIN, *Chairman*, presiding**

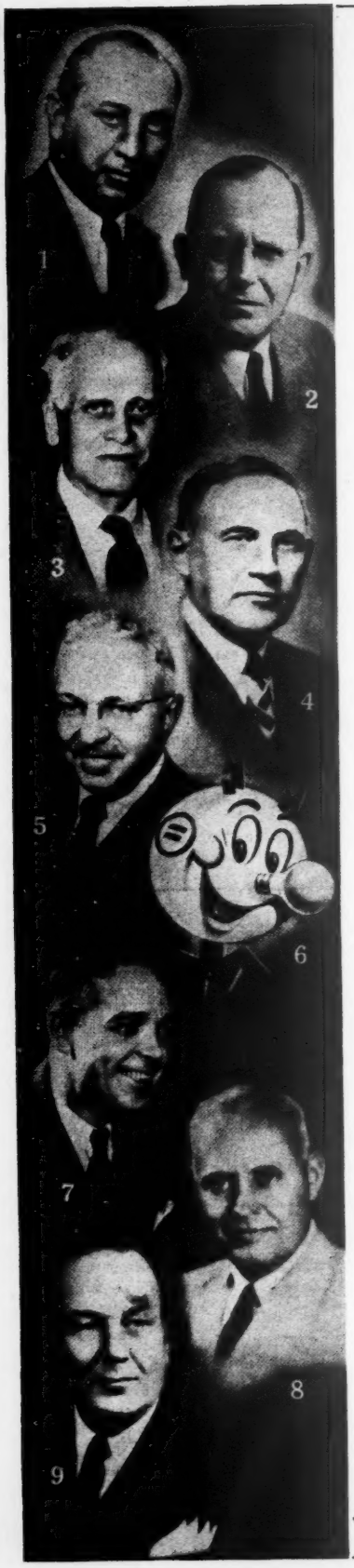
This meeting will be largely devoted to scheduling activities for the coming administrative year. (Attendance limited to Committee members.)

## RATE RESEARCH COMMITTEE

**2:00 P.M.—Club Room, Hotel Traymore**
**E. N. STRAIT, *Chairman*, presiding**

Up-to-the-minute reports on the rate situation. In addition to a summary of the progress of the committee during the current year, this meeting will include papers on subjects of particular interest in the field of rates.

**1. Mr. Taylor 2. Mr. Wagner 3. Mr. Chase 4. Mr. Breckenridge 5. Mr. Nickell 6. Mr. Martin 7. Mr. Strait**




# TUESDAY, JUNE 3rd

## ATLANTIC CITY CONVENTION HALL

### Morning Session—10 a.m.

**Welcome to Atlantic City**

HON. JOSEPH ALTMAN, Mayor of Atlantic City

**The Electric Industry and the Institute—The President's Report**

GROVER C. NEFF, President, Edison Electric Institute

**Labor and Management—One Team—One Furrow**

RALPH CHAPLIN, Authority on Labor Relations

The need to inform our employees about our business and get them on the team with management and free enterprise. Mr. Chaplin's convictions on labor-management relations are derived from nearly fifty years of varied experience as labor-editor, speaker and organizer.

**The Public Attitude Today**

DR. CLAUDE ROBINSON, President, Opinion Research Corporation

The findings from the latest public attitude poll made under the sponsorship of the national advertising group—and the implications.

**What To Do About It**

EDWARD R. DUNNING, Vice President, N. W. Ayer & Son, Inc.

Steps the industry should take, nationally and locally, to make further gains in public understanding and public support against politically-managed power.

**A Message from Thomas Alva Edison**

*A Feature Presentation*

### Afternoon Session—2:30 p.m.

**Youth Must Be Served**

*Reddy Kilowatt—A Feature Presentation*

**Looking to Your Future**

GWILYM PRICE, President, Westinghouse Electric Corporation

Mr. Price will point to the valuable position occupied by the utility industry in the national economy; as seen from the viewpoint of a former banker who has become president of one of the largest electrical manufacturing companies.

**If Only We Had Faith**

ELMER L. LINDSETH, President, The Cleveland Electric Illuminating Co.

A look at the future for the industry with some pertinent questions. Are the methods employed for recruiting, selecting, and training candidates for executive jobs adequate? Are incentives in compensation and industry recognition sufficient to attract enough young men of outstanding ability for realization of opportunities ahead for the industry?

**What Makes Leadership**

FRANK PIERCE, President, Dearborn Motor Company, Detroit, Michigan

A challenging talk aimed at the younger executives, telling them straight from the shoulder what it takes to become leaders in our industry.

---

**1. Mr. Altman 2. Mr. Neff 3. Mr. Chaplin 4. Dr. Robinson 5. Mr. Dunning 6. Reddy Kilowatt 7. Mr. Price 8. Mr. Lindseth 9. Mr. Pierce**

# WEDNESDAY, JUNE 4th

## ATLANTIC CITY CONVENTION HALL

### Morning Session—9:30 a.m.

**Election of Directors**

**Prize Awards Report**

H. M. SAWYER, Chairman, EEI Prize Awards Committee

**World Power Conference Announcement**

DR. JOHN C. PARKER, Vice President, Consolidated Edison Company of New York, Inc.

**Security Within Industry**

DR. ADAM S. BENNION, Utah Power & Light Company

Dr. Bennion will bring us up to date on the latest needs and practices relating to job studies, pensions, safety, training within industry, group insurance, etc.

**Let's Tell America**

R. S. PEARE, Vice President, General Electric Company

The importance of selling the American public on the American way of life and what each of us should do to bolster the free enterprise system.

**Marketing Is The Next Big Job**

DON G. MITCHELL, President, Sylvania Electric Products, Inc.

The need for new marketing tools and sales management concepts as well as the need for greater cooperative effort within the electric industry. It is no longer just a case of getting business, but of getting enough to maintain employment and of such kind and value as to bring production economies.

### Afternoon Session—2:30 p.m.

**Utility Company Organization for Handling Personnel Relations**

M. H. FRANK, Vice President, Wisconsin Power & Light Company

A report on the findings of a special committee appointed to study the subject.

**An Engineering News Report**

J. W. PARKER, President, The Detroit Edison Company

Latest engineering and technical developments and their implications. Gasification of coal, high-voltage transmission, gas turbines, heat pump, aerial cable, etc.

**Trends in Construction Costs and Implications**

WILLIAM RYAN, Asst. Engineering Manager, Stone & Webster Engineering Corp.

The effect of high costs on the future ability of the industry to realize fair earnings—the long-haul outlook on the financial problems of the industry.

**What Makes Free Enterprise Keep Ticking**

DR. VIRGIL JORDAN, President, National Industrial Conference Board

A broad-gauge informative and inspirational talk by a recognized authority pointing up what must be done to avoid a collapse of the free enterprise system. A plug for the profit motive.

### Evening Session—9:15 p.m.

**Charles A. Coffin Award Presentation**

**Hour of Charm Orchestra**

PHIL SPITALNY, Conducting

---

**1. Mr. Sawyer 2. Dr. John C. Parker 3. Dr. Bennion 4. Mr. Peare 5. Mr. Mitchell 6. Mr. Frank 7. Mr. J. W. Parker 8. Mr. Ryan 9. Dr. Jordan**

# THURSDAY, JUNE 5th

## ATLANTIC CITY CONVENTION HALL

### Morning Session—9:45 a.m.

**Factors Affecting Relocation of Industry**

H. F. RECH, Director, General Motors Corporation Power Section

A report on an extensive study and analysis of why and how industries select the locations for new and branch plants; the part the utility can and should play.

**Simple Simon Met a Rate Man**

GEORGE M. GADSBY, President, Utah Power & Light Company

An objective look at conventional rates and rate structures with a question or two about simplification and more ready understandability on the part of the consumer.

**A Look At Your Broadened Responsibilities**

THOMAS I. PARKINSON, President, The Equitable Life Assurance Society of the United States

As common stock of electric utilities goes more widely into the hands of the public, managements' responsibilities broaden. There are opportunities in this new investor relationship to cultivate better public and political understanding. A challenging talk on how these opportunities can best be realized.

**Atomic Energy**

REAR ADMIRAL WILLIAM S. PARSONS, U. S. N., Navy Director of Atomic Defense

An up-to-date appraisal of the latest developments in application of atomic energy to production of electricity or other power, with discussion on the implications to industries most affected.

### Luncheon Meeting—1:00 p.m.

## TRAYMORE HOTEL

**Pitfalls in the British System**

GENERAL WADE H. HAYES, President, Edmundsons' Electricity Corporation, Ltd., London

What the electric supply industry is up against in England, how the situation developed and what we can learn from British experience.

1. Mr. Rech 2. Mr. Gadsby 3. Mr. Parkinson 4. Admiral Parsons

# Aggressive Sales Programs Planned at Record-Breaking EEI Conference

THE LARGEST attendance yet recorded, a program packed with timely subjects capably handled by outstanding speakers, and a widespread feeling among those attending of confidence and the need of aggressive planning for future sales activities, marked the Institute's 13th Annual Sales Conference, which was held at the Edgewater Beach Hotel, Chicago, from March 31 through April 3.

About 800 electric utility sales executives and representatives of appliance manufacturers, state and local electrical associations attended the four-day meeting, which was directed by Ralph P. Wagner, Chairman of the EEI Commercial Division General Committee.

A feature of the conference was the presentation of two prize awards, administered by the Institute, which were suspended during the war, and have just been resumed.

The Thomas W. Martin Award for rural electrification was won by the Central Vermont Public Service Corporation, Rutland, Vermont, with Ralph J. Bugbee, Director of the company's Farm Department receiving the bronze plaque from H. M. Sawyer, Chairman of the EEI Prize Awards Committee.

Mr. Sawyer also announced the winners of the McCall Award, offered by *McCall's Magazine* for outstanding accomplishments in home service activities. Miss Marguerite Fenner, Home Service Director of the Pacific Gas & Electric Company, San Francisco, Calif., received first prize, consisting of a handsome plaque and $150 in war bonds.

Second prize was awarded to the New York Power & Light Corporation, Albany, N. Y., Miss Emma L. Renaud, Home Service Consultant; third prize to New Orleans Public Service, Inc., New Orleans, La., Home Service Department; fourth prize to the Duke Power Company, Charlotte, N. C., Miss Charlotte Mobley, and fifth prize to the Florida Power Corporation, St. Petersburg, Fla., Miss Kathryn M. Holy, Director of the Home Service Department.

Commercial committee meetings were scheduled for Monday, March 31st, and many important projects were considered in well-attended sessions. At a dinner meeting Monday evening of the Commercial Division General Committee, the Chairmen of the Residential, Rural, Commercial and Industrial Sections of the Commercial Division, and several Chairmen of special committees, turned in encouraging reports of their progress during the previous year and their plans for future activities.

### NEMA Sponsors "Go All Electric" Program

All-day meetings of the four commercial sections filled Tuesday, April 1. Among the outstanding subjects presented at the Residential Section meeting was the "Go All Electric" program sponsored by the National Electrical Manufacturers Association, which was described by J. R. Poteat, Chairman of the NEMA campaign committee. The success of this program in the field was then discussed by H. G. Isley, Carolina Power & Light Company; H. H. Brenan, Pennsylvania Power and Light Company, and O. R. Doerr, Pacific Gas & Electric Company.

Among the other well-known speakers scheduled for the Residential Section by J. M. Stedman and H. A. Stroud, who served as Chairmen of the meeting, were Gerald Hulett, Vice President of Electromaster, Inc., discussing the need for trained, capable salesmen in the coming buyers' market; Don Julien, Executive Secretary of the Certified Lamp Makers, who analyzed the new Certified Lamp program, and M. R. Rodger, Utility Sales Manager of Bendix Home Appliances, Inc., speaking on the modern all-electric home laundry.

The residential meeting closed with a presentation entitled "Home Service Tells All," which was prepared by Miss Fern Snider, Home Service Director of the Georgia Power Company, Atlanta, Ga., and Chairman of the Home Service Committee, EEI. Miss Snider was assisted by Mrs. Routh Neill, Kingsport Utilities, Inc.; Miss Anne Sutter, Duquesne Light Company, and Miss Lucile Johnson, Public Service Company of Oklahoma.

### Farm Section Boosts In-Service Training

The Farm Section, led by Chairman E. C. Easter, of the Alabama Power Company, Birmingham, Ala., devoted most of its meeting to the problem of in-service training for agricultural workers, such as extension personnel, agricultural college staffs, and county agents. The in-service training program prepared by EEI to meet this need, which will be released in the near future, was discussed by John L. Burgan, New York State Electric & Gas Corporation, who was assisted by Russell H. Gist, of the West Virginia Agricultural Extension Service, and J. B. Stere, West Penn Power Company.

The agricultural workers' part in farm electrification was presented during the afternoon by a panel of speakers, including Ide P. Trotter, Director, Agricultural Extension Service, College Station, Texas; K. K. Vining, County Farm Agent, Grand Rapids, Mich.; Miss Jessie Campbell, Home Demonstration Agent, Pontiac, Ill.; C. A. Rhoad, State Supervisor, Vocational Agriculture, Columbus, Ohio., and Donald M. McDowell, Vocational Agricultural Teacher, Waukesha, Wis.

The need for adequate construction in rural lines was capably discussed by H. E. Stites, Central Illinois Public Service Company. R. G. Walter, Wisconsin Power & Light Company, analyzed the adequacy of single phase service for farm operations.

The Commercial Sales Section, with Eben Haskell, United Illuminating Company, and W. Grant Parry, New Jersey Power & Light Company, guiding the meeting, heard such competent speakers as Adolph Rebensburg, of Hotpoint, Inc., who covered the value of adequate market research in commercial sales; Paul Brooks, Ebasco Services, Inc., speaking on the commercial sales organization and its operations, and Marshall Havenhill, Kansas City Power and Light Company, on the importance of wiring in the commercial lighting program.

MISS MARGUERITE FENNER (left), Home Service Director of the Pacific Gas & Electric Co., San Francisco, Calif., receives the McCall Award from H. M. Sawyer, with Camille Davied, Executive Editor, *McCall's*, looking on. The award, offered for outstanding accomplishments in home service during 1946, was presented at the EEI Annual Sales Conference, Chicago, on April 2.

RALPH J. BUGBEE (left), Director of the Farm Department, Central Vermont Public Service Corp., Rutland, Vt., receives from H. M. Sawyer, chairman of the EEI Prize Awards Committee, the Thomas W. Martin Award for his company's achievements in rural electrification in 1946, at the Annual Sales Conference in Chicago, April 2.

"Lighting Facts for Merchandisers" was the title of a presentation by James M. Ketch, of the General Electric Company. I. C. Baker, of the Air Temp Division, Chrysler Corporation, discussed the future of air conditioning. E. O. George, of The Detroit Edison Company, reviewed the present status of the EEI Sales Training Course, and the experience of the industry with this well-received program.

The Industrial Power and Heating Section, with Charles Snyder, Monongahela Power Company, and J. R. Hartman, Cincinnati Gas & Electric Company, in the chair, heard H. B. Maynard, President of the Methods Engineering Council, Pittsburgh, Pa., speak on increasing industrial production through improved production methods. B. H. Shaffer, Vice President, Willard Storage Battery Company, Cleveland, Ohio, outlined the factors to be considered in selecting the location of branch factories.

R. C. Borden, the noted sales consultant of Newark, N. J., discussed the problem of retraining salesmen for creative selling in the returning buyers' market. C. W. Bloedorm, Allis-Chalmers Manufacturing Company, Milwaukee, Wis., spoke on the use of turbines in industrial plants. Other equally well-known speakers were heard, to round out a varied program.

### General Sessions—Wednesday, April 2

Opening the General Sessions, Chairman Wagner told his audience that "We are on the verge of a buyers' market, where selling will again be a 'must' for every sale.

"We are practically the only industry which can point to decreasing prices for our service, during the war and the ensuing period of price inflation. Our sales have increased beyond our expectations, and there is some evidence that the industry has been lulled into an increasing sense of endless prosperity by this lush period," Mr. Wagner said.

"While the sale of electrical service may not be a pressing problem of the moment, we may, without warning, find ourselves facing a situation where sales are imperatively needed for the financial welfare of our companies. . . . Sales forces cannot be built overnight. The signs of coming changes are even now so clear that we should be prepared to meet the day when sales will be demanded."

"Foreseeing the coming need for aggressive selling, the Institute prepared an all-industry sales training course, now being used by over 200 utility companies," Mr. Wagner declared. "Selling tools will also be provided," he added, "one of which is a promotional program on Planned Lighting, to be introduced at the conference."

"The maintenance of equilibrium between prices, wages and profits is difficult, but necessary to the economic welfare of our country," John D. Gill, Economist of the Atlantic Refining Company, Philadelphia, Pa., told the conference. "In certain industries," he warned, "organized labor has forced employers to accede to wage increases, on top of the highest industrial wage rates, and has thus increased the gap between these wage earners and those of employers, public and private, who have not had the resources for prompt wage raises, even to match cost-of-living increases.

"Labor has little cause for discontent over its share in the growth of productivity," Mr. Gill charged. Between 1909 and 1945, the national income rose about $132 billion. "During this period, wages and salaries were increased by $98 billion, with corresponding increase of corporate profits of less than $7 billion—a large part of which was plowed back into business, and helped make possible the increases in wages," he explained.

"Since 1900, industrial wages have increased 375 per cent, and individual wage earners now enjoy real wages equal to 209 per cent of the 1900 real wages, after allowing for the change in cost of living. Holders of industrial stocks received a net increase in dividends of only 29 per cent—not enough to cover the increase in living costs," Mr. Gill stated.

"An educational program on the need of Better Light, that is five times larger than any previously prepared, is now being produced by the Better Light, Better Sight Bureau for use in 1947," Harry Restofski, Bureau Chairman, announced to the conference. "This activity is designed to provide the educationa!

basis required for successful use of the industry's Planned Lighting Program," Mr. Restofski said.

Emphasizing the need for education as a basic part of any lighting promotion, Mr. Restofski pointed out that "Survey after survey shows that homes are woefully underlighted . . . home lighting intensities average only six to eight footcandles, when the need is for several times as much. Ten to twenty million portable lamps are purchased annually, and most of them are wholly inadequate for easy seeing. While women buy most lamps to provide light, they select them primarily for decorative appeal.

"People will buy and use the kind and amount of lighting they need, only when they are made to understand the benefits accruing to them," Mr. Restofski said. "The educational approach to lighting is much more necessary than is true in the appliance markets. The Bureau's program is its biggest, and its materials will be its best, because the need is the greatest."

PL Means PL—Planned Lighting Means Profit Load—is the keynote of the Planned Lighting Program sponsored by EEI, Joseph S. Schuchert, Chairman of the Institute's Commercial Sales Section, told the conference. "The coordinated approach to lighting sales made possible by this program offers the industry increased sales of electric energy and lighting equipment; improved public relations; use of the concept of Planned Lighting to serve as a standard in all lighting installations, and to serve as a means of combating irresponsible salesmen of unsound lighting equipment," he declared.

The vital contribution of lighting load to utility net revenues was emphasized by Mr. Schuchert, who pointed out that "Low selling cost, advertising value, good load factor, no saturation, low mortality, high power factor, no competitive methods and tangible customer satisfaction mean that, generally speaking, lighting load produces greater kilowatthours and revenue per dollar of plant investment, per dollar of operating cost and per dollar of selling cost."

"The program," Mr. Schuchert continued, "is aimed at providing customers with modern lighting installations, especially designed for their specific living, working and selling needs. Customers in five major markets—residential, store, school, office and industrial — will be urged to have their lighting installations planned according to the latest authoritative practices in lighting, before buying any equipment," he explained.

"When built up properly and executed effectively, Planned Lighting infers 'guaranteed good' lighting. It's an implied certification. It has great customer appeal, and can be a strong promotional weapon. For all our markets—home, store, office, school and factory—we can apply the Planned Lighting theme straight across the board. Thus, we have a standard-bearer which can lead to the development of this market on a scale never before thought possible," Mr. Schuchert declared.

"An overall plan book, explaining the reasons for the program and its importance to the power company, has been distributed to chief executives," Mr. Schuchert said. Individual plan books, backed by a wealth of advertising, mailing pieces, sales promotion aids and other materials, are being prepared for use in each of the five major lighting markets, and will be ready for distribution within the near future.

### Wednesday Afternoon Session

Twenty-five per cent of the new homes to be built in Indianapolis over the next five years, that are valued at $9,000 or more, will purchase electric heat pumps for their house heating systems, assuming availability of equipment, it was estimated by A. C. Crandall, Vice President of the Indianapolis Power and Light Company. His forecast, Mr. Crandall cautioned, was based upon two years' experimental work with a heat pump installation, and intensive study of his company's area.

"Another 10 per cent of the now existing homes in the city will buy heat pumps during the same period, if suitable equipment is on the market, making a total of 3,480 heat pump installations during the five-year period," he predicted.

"With an average use of 9,000 kilowatthours per home for year-round heating and air conditioning, this would mean an annual increase for his company of 31,320,000 kilowatthours, for heat pump service alone—a figure equal to 17.4 per cent of the company's total residential sales during 1946, although the estimated 3,480 installations represent only 2.5 per cent of all residential customers," Mr. Crandall said.

These estimates are based upon the assumption that fair supplies of heat pump units will be available within the next 12 to 18 months, and will be priced not too far above the cost of other types of automatic heating equipment, he pointed out. "The heat pump is worthy of the best efforts of our industry—not only because of its potential new load and revenue, but because of its potential contribution to better living in the homes of our customers," Mr. Crandall said.

Prices of electrical appliances should settle at a level considerably above the prewar range, Dr. Paul L. Morrison, Chairman of the Department of Finance of the Northwestern University School of Commerce, forecast. "Within the near future, moderate price adjustments are to be expected in certain appliance items," he said. "Prices of some appliances have risen faster than prices in general, due to supply shortages which are now being rapidly remedied by our powerful productive machine. As the shortages disappear, price reductions in these lines should follow," Dr. Morrison stated.

Urging his audience to hold appliance inventories to their minimum requirements until price changes have been completed, Dr. Morrison stressed the need for caution in building inventories at the present time. Although the long period of shortages, combined with a large pent-up demand for appliances, makes it hard to calculate a reasonable inventory, the economist pointed out that "As soon as buyers are priced out of the market, purchases of durable consumers' goods are the first to be postponed."

Howard D. White, Executive Vice President of the Liquefied Petroleum Gas Association, Chicago, outlined the plans of the bottled gas industry for promotion of its product, to a most alert audience. His industry is confident that its fuel does a better job in many applications than does any other source of energy, and welcomes strong competition, Mr. White declared. Aggressive sales promotion and advertising, and capable sales staffs, will be used extensively to promote LP gas in the future, and Mr. White predicted that the rapid growth of the bottled gas industry would continue.

"Labor-saving electrical equipment has a tremendous appeal to the farmer in these days of labor scarcity and high wages," Paul E. Miller, Director of Agricultural Extension, University of Minnesota, told the conference. "The farmers' demand for equipment con-

tinues to increase, and they have ample resources with which to buy," he continued.

### Thursday Morning Session

A production of 40 billion pounds of frozen foods per year by 1955, as compared with production of less than 2 billion pounds during 1946, was predicted by E. W. Williams, publisher of *Quick Frozen Foods Magazine*. "The greatest food revolution of the next ten years will be the gradual conversion of most of the foods we eat into preservation by quick freezing," Mr. Williams declared.

Emphasizing the rapid growth of the frozen foods industry, Mr. Williams told his audience that the number of locker plants increased from 1,500 in 1937 to a present total of over 8,000; over 45,000 retail stores are now equipped to handle frozen foods products, and well over 100,000 home freezers are in use. He estimated that one million home freezers will be sold during the next two or three years.

Increased activity in frozen foods will have a lasting effect on the electric power industry, Mr. Williams stressed. An eventual consumption of 11 billion kilowatthours per year, excluding the consumption of home freezers, is confidently expected in the frozen food industry.

"Tool Up for Sales Training," a dramatic presentation emphasizing the need for sales training now as a basic element of successful selling in the coming buyers' market, was the next event on the conference program. Presented by the EEI Sales Personnel and Training Committee, the skit employed the services of the E. T. Brewer, F. C. Pesveyc, R. O. Doerr, W. B. Statham and C. A. Stevens, all of the Public Service Electric & Gas Company, Newark, N. J.

Arthur H. Motley, President of Parade Publication, New York City, described the coming need for old-fashioned, hard-hitting salesmanship in solving many problems faced by industry today.

A production of 400,000 television receivers of all models during 1947, as compared with less than 10,000 receivers manufactured during 1946, was forecast by Reynold R. Kraft, General Sales Manager of Television for the National Broadcasting Company. Eleven commercial television stations are now operating in eight markets, Mr. Kraft said, and forty construction permits have been granted for new stations.

Reminding his audience that television, as now constituted, depends upon advertising for its revenue, Mr. Kraft said that "There are hundreds of cases in which television has proven itself not only a good advertising medium, but the best yet devised. The initial expense of putting on a program is not insignificant. To justify this cost, circulation is needed by the advertisers, and this can be created only by giving prospective receiver purchasers worthwhile programs."

### Luncheon Session

Pressly H. McCance, President of the Duquesne Light Company, Pittsburgh, Pa., and Vice-President of the Edison Electric Institute, spoke briefly at the closing luncheon session. Stressing the importance of the commercial department to each utility company, he urged his listeners to consider their programs as they appear to chief executives, and to evaluate proposed expenditures carefully in terms of their expected results.

Don G. Mitchell, President of Sylvania Electric Products, Inc., New York City, emphasized the role of sales in the postwar period. "If American industry is sincere in wanting the minimum of governmental interference in the operations of our economy, then industry must assume the responsibility of providing the sales that will insure reasonably full employment," he declared.

"If you are to preserve free enterprise in utility operation, neither you nor your managements can ever afford to become complacent and satisfied with your sales results," Mr. Mitchell continued. Pointing out that one reason advanced in support of nationalization of the electric utilities in France and England was the necessity for developing the electrical market beyond what private ownership apparently had been able to do; he said that "Constant evidence that you are encouraging the use of electricity in every way will help to convince the public that you are contributing to the welfare of the communities you serve."

"The faster our sales programs get moving, the sooner will we be over this period of adjustment and in the period of prosperity."

## Purchasing and Stores Committee Meeting

**R. S. King, *Chairman***

THE Purchasing and Stores Committee held their Spring Meeting in Chicago, at the Palmer House, March 31, April 1 and 2.

The Meeting was preceded by a meeting of the Executive Committee, at the Union League Club in Chicago, on March 30.

Sixty-one members and guests registered, representing companies in most states, including Canada, state of Washington, California, Florida and Maine.

Reports were received on the following Subjects:

"Methods Employed in Handling and Storing of Materials."

"Servicing Overhead Trucks and Others at Warehouse."

"Standard Packaging and Descriptions."

"Functional Accounting as Applied to Purchasing and Stores."

"Truck Stocks."

"Report on New Developments in Stores Buildings, Design and Material Handling Equipment."

"Wood Pallets Vs. Steel Pallets."

"Most Practical Pallet Sizes."

"Report on Salvage Practices of Member Companies."

"Classification of Scrap for Sale."

"Survey of Departmental Responsibilities for Procurement."

"Survey of Local Purchasing Procedure."

"Material Cost Trends, Supplementary Report."

Mr. P. H. Chase, Chief Engineer, Philadelphia Electric Company and Chairman, EEI Engineering Division, General Committee, spoke on "Reciprocal Relationships between the Purchasing and Stores Departments and the Operating and Engineering Departments."

Mr. J. G. Dickinson, representing the Accident Prevention Committee of the Institute, discussed accident prevention in warehouses and storage yards.

Mr. G. M. Shaeffer, representing the Peabody Coal Company, talked to the Committee on the current and prospective coal situation.

The Fall Meeting of the Committee will be held in Atlanta, Ga., the latter part of September.

# Education Is the Foundation for Lighting Sales

**By Harry Restofski**

*Chairman, Better Light—Better Sight Bureau*

An address presented at the EEI Sales Conference at Chicago, Ill. on April 2, 1947

THE MAJOR elements of the lighting industry have never rolled up their sleeves and really gone to work together to sell good lighting straight across the board. It's high time that we do. Electric lighting is an essential service that customers should use much more freely. It represents a tremendous market. Scientific developments in the field of lighting have come thick and fast in recent years. Knowledge of the need for better lighting continues to grow faster than our planning and organizing to do something about it. There is a great need for more lighting education for ourselves and our customers. Let's take stock of how we stand.

Every survey made in recent years shows that homes are woefully underlighted, according to the most conservative standards recommended by lighting authorities and generally approved by vision specialists. Sure, home lighting has been improving, but so slowly that, after years of working at it, home lighting intensities average only 6 to 8 footcandles when the need is for several times as much.

### For Decoration or For Use?

Purchases of portable lamps of all kinds average in the neighborhood of 10 million annually. Most of the lamps are wholly inadequate for easy seeing. That's because, while women buy most lamps to provide light, they select them primarily for their decorative appeal. They do that because we haven't told them often enough and convincingly enough of their need of Better Light for Better Sight, or of the contribution of really good lighting to interior decoration. In the main, fixtures are bought with one eye on appearance and another on price, and with little or no regard for the most important factor—the seeing value. People buy poor lighting for two reasons. First, they just don't know any better. They need more lighting education. Second, sales people of most home lighting retailers don't know the first thing about home lighting needs. They sell lamps and fixtures, but not good lighting. That's because they, too, need lighting education. One of our great weaknesses is that we have not done a job of helping retailers to sell home lighting equipment for seeing values.

Because of all this 30,000,000 homes need four times as much light.

If there is any place where good lighting is important, it's in the schools. Thirty million pupils attend them. Sixty million eyes work hard there during the years of their development when seeing habits of the future are being formed. If we can build an appreciation of the value of better lighting for better seeing in these school youngsters, we establish lighting standards for the citizens of tomorrow.

Most of us know of one or more schools that are quite well lighted. That may cause us to forget that the average classroom has nowhere near 10 footcandles of illumination, with intensities of 5 and even 3 very common.

That's why for Better Sight our 258,000 schools need seven times as much light.

### Better Working Light Conditions

How about office buildings? You're right. They don't have nearly enough light either. It could be that even your office is poorly lighted. Surveys show that 100,000 office buildings, with more than a million individual offices in which more than 5 million people work, need five times as much light as they now have.

During the war, in many plants—especially in some of the new plants, standards of industrial illumination were raised to present recommended practices. This was done because of the realization, particularly by the War and Navy Departments, that good light for seeing meant better production. But let's not be misled by the exceptional cases. Fact is that the great majority of industrial plants are still trying to operate efficiently and meet competition with intensities of 10 footcandles, plus or minus, and more minus than plus. For better production, 200,000 industrial plants need four times as much light.

Yes, despite the fact that lighting practice has steadily improved, our knowledge of the need for better lighting has grown much faster than our planning and organizing to do something about it. We are on the threshold of the greatest opportunity for lighting progress in all the history of the industry. That's why it's timely that we work together to really sell good lighting. That's why the Industry Lighting Program marks an important milestone in lighting history.

Selling good lighting differs fundamentally from selling good electric appliances or equipment. Sell a customer on an electric range and you know that, almost regardless of the particular brand or model he buys, he'll enjoy all the basic advantages of electric cooking. Sell a customer on electric refrigeration and you know he'll automatically have proper temperatures for food preservation. Sell a customer on electric water heating and, regardless of which he buys, he gets the benefits of the most perfect hot water service available. He can make only one important mistake, and that's to get one that's too small. And to minimize that possibility, we write protective clauses into rates and provide free advice. The point is that, whether it's a range, refrigerator, water heater, or most any other appliance, we're selling packaged products, engineered and built at the factory to meet ordinary family needs.

### Tailormade Lighting

But it isn't so with lighting. Lighting doesn't come in complete packages ready for home, or school, or office, or factory. That's what makes it different. People don't need to know a lot of detail about their electric range, refrigerator, or water heater needs. They are so uniform that manufacturers know them and provide for them, and salesmen sell them without a great deal of special product application knowledge. Lighting isn't like that—it must be tailor-made. That's why the lighting knowledge of the few has outstripped the lighting practice of the many. That's why there is such a crying need for better lighting. That's why we need so much lighting education. That's why it's high time we do something about it in a big way.

We need a structure to house our

thinking and planning, to provide an operating base for coordinated action to promote better lighting. That structure is being built now. It must have a good, solid foundation. That foundation is the basic philosophy of the Better Light—Better Sight movement. That movement is based on these facts stated in the original prospectus thirteen years ago and just as applicable today:

1. Defective vision is steadily growing as our eye work increases. Already 20 to 30 school and college children out of every hundred have it, as do 70 out of every hundred persons over 50.
2. Defective vision is a menace to the health, happiness, and efficiency of every man, woman, and child.
3. This widespread evil can be combated in only two ways. One is by correction of existing eyesight defects and proper care of the eyes. The other is by elimination of one of the main causes of eyestrain—inadequate lighting.

So here we have an educational, social service that is, at the same time, a market building enterprise—the solid foundation on which we can build a lighting sales program.

### Teach Benefits of Good Lighting

People will buy and use the kind and amount of lighting they need only when they are made to understand the benefits accruing to them. That's axiomatic. The experiences and accomplishments of the past dozen years point it up. Everybody wants electric lighting but, because they don't know a fraction enough about good lighting, they are content to use too little of it. An educational approach to lighting is certainly more necessary than is true of the appliance markets. And that approach, that kind of foundation, is a "must" if we are to do the kind of industry job we should do. Yes, education is the foundation of lighting sales.

It was the realization of this basic fact that led, some 13 years ago, to the birth of the Better Light—Better Sight movement and of the Better Light—Better Sight Bureau to spearhead it. Despite the size of the job confronting us now, a good deal of progress has been made since those days in developing consciousness of the relationship of light and sight. Let's appraise it briefly.

The sales promotional program back of I. E. S. lamps sold millions of them. But back of that sales promotion was an education program to teach the public and the industry the latest facts and findings of science in the relationship of light and sight. As a result of education and promotion, we had an acceptance of basic improvements in portable lamp design. The way was paved for the CLM lamp program and the AHLI fixture program that will soon give us really good equipment to see by and that, from a decorative standpoint, will be superior to anything heretofore available. We now have more new facts in the science of lighting practice on which to base new and better education programs for the public and for our sales organizations and those of dealers.

Once a rarity, it is now commonplace to see writings on the relationship of light and sight by authorities in the vision and education fields.

### Better Light—Better Sight Bureau

The improvements that have been made in lighting equipment from a seeing standpoint have been largely due to the basic principles of Better Light for Better Sight. Without that we would still be having lighting equipment produced with appearance and price as almost the sole consideration.

The need for better lighting in industrial plants, as well as in schools and offices, has been pointed up, and pilot installations all over the country pave the way for more general acceptance.

This educational movement has made a definite contribution to public understanding of the need for better lighting for better seeing, and to those of us in the industry it has made clearer our opportunities and responsibilities.

The Better Light—Better Sight Bureau has been a real force in bringing about improvements such as these. While its program is the oldest in the electrical industry, it is still an expanding one.

"Better Light—Better Sight News" has been improved in format and content, and is being distributed in steadily larger numbers. The Bureau's technicolor picture, "Light is What You Make It," is a Disney production that dramatizes the fundamental relationship of light and sight as it has never been done before. It is a first-rate lighting education tool now being used by almost 100 companies. In my company we use three prints. We showed them to over 60,000 people in the past half year. They liked it, and we know it helped us. Other companies report showings to as many as 125,000 people during the same period.

At the Bureau's instance and with its technical assistance, the National Education Association, the leading organization of school officials and teachers, produced a teacher's manual called "Teaching About Light and Sight." Already about 16,000 copies are in use. I am convinced that production of this manual will turn out to be one of the most important steps ever taken in the broad field of lighting education. Through thousands of teachers it will affect hundreds of thousands of pupils, and I am certain it will lead to the preparation of still more teaching aids on light and sight.

For example, right now the Bureau has a program under way for revision, with the help of N. E. A., of certain materials previously widely used in schools in teaching about light and sight. N. E. A. is helping us to do a good job from an educational standpoint by calling in a group of experts who will spend several days doing the job. Educators are becoming interested in light and sight and that is encouraging for the future.

Only a few weeks ago the Bureau had a competently-manned exhibit at the Annual Convention of the American School Administrators at Atlantic City. Over 12,000 were in attendance. There was an almost continuous flow of school people in the Bureau's booth, all interested in better lighting for classrooms. Many wanted to know where they could get help. We distributed hundreds of pieces of school lighting literature and, in all cases, suggested the administrators get in touch with their local electric company for help and advice. It was surprising how many did not know that such help is available at no charge.

### Planned Lighting Program

Yes, the Bureau has been busy. But right now its program is undergoing tremendous expansion. It has in active preparation, under the guidance of competent committees of manufacturer and electric company people, and with the help of a good advertising agency, a program five times as big as in any past year!

It consists of some 32 different lighting education materials. They are outstanding in excellence. Some of them, in themselves, represent major projects. They cover the important Light for Seeing tasks in home, school, office, and factory. They include new and dramatic booklets for new homes and old, mailing pieces and envelop stuffers for the major fields where Light for Sight is important, films and visualizers and a complete

(*Continued on page* 122)

# The Planned Lighting Program for the Electrical Industry

**By Joseph S. Schuchert**

*Chairman, Commercial Sales Section, Commercial Division, EEI*

**A speech presented at the Commercial Sales Conference of the EEI, held at Chicago, Ill., on April 2, 1947**

AN AXIOMATIC statement that is almost too trite to repeat is that the electric light and power industry is interested in greater net profit. Greater usage, better service, lower rates, improved employee relations, better public relations and greater owner satisfaction all stem from the stabilized operation of a strong company earning legitimate profits.

Utility executives appreciate the fact that different types of service applications contribute in different ways to the net profit picture. We know that certain kinds of loads are better net profit producers than other types and we realize that all loads do not have the same effect on our investment requirements.

### Importance of Lighting Load

We want to develop profit load. We are willing to spend time, effort and money to add more and more of this profit load to our lines. High in the listing of profit load, perhaps in the number one spot in most utility operations, is lighting load. This presentation will not attempt to prove that statement. I believe most of us accept it. Many factors such as good load factor, high power factor, low selling cost, worthwhile advertising value, no saturation, low mortality, no competitive methods and tangible customer satisfaction mean that generally speaking lighting load produces greater kwhr and revenue per dollar of plant investment, per dollar of operating cost, per dollar of selling cost. How about good will and public relations? The best satisfied customers are those enjoying the benefits of good lighting.

Thus, every utility company wants lighting load. From a long range viewpoint lighting has a tremendous future —provided the industry is equal to the task of developing the market.

Many companies are confronted with capacity problems and equally serious labor and finance problems. Thus, an executive may find it difficult to give the proper measure of importance to the development of lighting loads and to the sale of better lighting. A few statements may be thought-provoking in this connection:

1. Most utilities would have a difficult time operating without high net profit lighting load.
2. Your lighting load is in jeopardy. You are vulnerable. You can lose a large percentage of it, possibly 25 per cent, maybe even 50 per cent, for some lighting applications. The threat can be very serious, but it can be turned into a grand opportunity. You can *gain* 25 per cent or more!
3. Customers are appreciative of the benefits derived from good lighting. Lighting is important to public relations.
4. Successful lighting sales programs are not developed overnight. The "know how" which comes from organization and training must be supplemented with promotional programs and seasoned with enthusiasm before tangible results can be accomplished.
5. Your public — your customers are not sold by one call or one campaign. This is a mission—a crusade. Changes in trends or methods are accomplished only by the persistent, aggressive offense of an industry which eventually results in customer acceptance. That offense takes time before it really clicks, gains ground and scores.

### Start Lighting Plans Now

Thus, if you agree that lighting load is a profitable load, you should do your missionary work now—not after all your other problems are settled. It may be too late then. You may have been concerned about your garage and let your house burn down.

### Our Need—Planned Lighting

Thus, one of our important problems is to sell (I said sell) good lighting load. This problem is different from what it was in the past. Today's answer to that problem is the "Planned Lighting Program for the Electrical Industry," sponsored by the Edison Electric Institute.

PL/PL—Planned Lighting means Profit Load for You!

Also PL/PL—Planned Lighting means Profit Lighting for your Customers!

### What Is The Planned Lighting Program?

What is the Planned Lighting Program? It is a program aimed to provide customers with modern lighting installations designed to serve economically and efficiently their specific living, working and selling needs.

It is a program which will prevent the wasteful and disappointing application of marvelous new light sources.

To this end we will sell users on the desirability of well *planned* lighting and provide manpower which is trained to create and execute those plans.

Thus, we simply tell our customers to have their lighting planned before they buy it! All branches of the industry including manufacturers, jobbers, contractors, dealers and utilities in a lesser or greater degree have been planning lighting for years. So, what's new about that? Just this—the problem, the program, the methods and primarily the sales approach are more radically different than they ever were before. We never had similar problems. We never appealed to our customers or to the other branches of the industry just this way! We never cooperated in a coordinated program just this way! I want you to consider with me three major parts:

1. The concept of the program.
2. The execution of the program.
3. The promotional effort to support it.

### Concept of The Planned Lighting Program

Surveys and studies of possible lighting markets after the war indicated that

unusual things have occurred which call for an extraordinary solution. The stereotyped methods of the past cannot cope with the situation. The war interrupted a complete revolution of the lighting industry. Every branch of the industry has been affected by basic and far-reaching changes. These changes involve:

1. The engineering and technical side of lighting.
2. The market—its size and type.
3. The number and type of manufacturers and sales outlets.

### Changes in the Engineering or Technical Phases of Lighting

A few years before the war the entire industry was confronted with what some may have chosen to call the opportunity and others the threat of fluorescent. Instead of having one basic light source, the incandescent lamp, and being concerned only with the size of the bulb, we now must select from several types of fluorescent light sources as well as the filament sources which still will have many applications.

Lighting equipment into which these light sources fit further complicate the problem. The many types of equipment and methods of installations are confusing. A good illuminating engineer must constantly keep up-to-date in order to have a thorough understanding of these new developments. Your customer is, or will be, hopelessly confused. What do most of us know about furs or diamonds—or woolens or fabrics for that matter? Purchases are made on the strength of the confidence the customer has in the salesman or the company he represents after which he hopes for a good deal.

Do we have a responsibility? Do we need a Planned Lighting Program?

### The Change in the Market—Its Size and Type

The "miracle of modern business" is an oft repeated phrase. We are usually amazed at the miraculous mass production facilities of hundreds of businesses and industrial and mechanical processes. They are miraculous but, after all, what is it that makes most of them possible? The obvious answer is the demand for the product. And what is the most important single factor affecting demand? The inherent all-consuming American desire for "the new—the different—the modern—the up-to-date"; and so, before the war (and we'll do it again) we changed cars, furniture, appliances, radios when they were almost brand new compared to the full amount of life that was built into them. For the same reason thousands upon thousands of our customers in homes, stores, offices, schools and factories will buy, in fact are buying new lighting fixtures, not lighting but, in most cases, "just fluorescent fixtures" and will continue to do so unless we do something about it.

### The "Pattern" of Fluorescent Sales

Tabulated and reconciled results of several surveys are interesting. More than 25 per cent of the main street merchants have fluorescent lighting for general illumination; 40 per cent bought it because it gave them more lighting; 80 per cent of those who do not now have it say they will buy it; 12 per cent of our homes have bought some fluorescent.

Most fluorescent jobs are poor from both the quantity and quality standpoint but nevertheless the new type of lighting has taken hold and your customers want it. Why do they want it? Because it is new, it has the modern appeal, it's the new style, it's the advanced way of doing things. Furthermore, many think and have been told that fluorescent will cut their light bill.

Many enterprising individuals will see a possible sale to replace every incandescent fixture being used for general lighting purposes. Regardless of the type of incandescent unit or the business of the customer, the possibilities, yes the probabilities, are that most incandescent fixtures will be replaced eventually. What might happen when a buyers' market develops and many salesmen appear on the scene? We don't have to guess. A complete change-over in lighting is bound to occur within the next few years. A comparable situation on this scale never occurred before since the change from oil or gas to electric lighting.

What a tremendous market! This also *can* be a big market for you! Again I say, "Do we need a Planned Lighting Program?

### Increase in the Number of Manufacturers and Sales Outlets

This tremendous market has and will bring large increases in the number of manufacturers and sales outlets. That already has been apparent, but when materials are readily available in large quantities our customers will be bombarded with salesmen and literature from unbelievable numbers of lighting equipment manufacturers. Some will be the old, legitimate, ethical organizations.

Many will be fly-by-nights, "shoestring" operators. They'll do a job for our customers and for us, and WHAT a job it will be. If we recover from it at all, we will spend many years of hard effort, many, perhaps millions of dollars collectively to offset the damage done. We have much to lose! Do we need a Planned Lighting Program?

I believe this is enough to indicate that "changes have been made," that a revolution has occurred in the lighting industry and that all of the problems of that industry are different and perhaps more complicated than they were in the past.

### What Shall We Do About It?

What shall we do about it? The Planned Lighting Program is the answer. I'll try to tell you why.

You will agree that one of the most successful, cooperative lighting activities resulted from the I.E.S. Certified Portable Lamp Program. Until that program started to click, home lighting was more conversation than fact.

During the war many lighting people thought that we must have something similar to this covering lighting installations of all types in the postwar period; that we must have a standard—a guide—a code—a something which might be a measuring stick that the user can apply to help him out of the confusion brought about by the many new lighting developments that have come out of the war and have not yet had wide distribution.

Such certification programs as are now in existence are very helpful. They have been stepping stones toward quality lighting sales, but full coordination and cooperation is impossible under such programs.

### Definition of The Planned Lighting Program

The Planned Lighting Program was conceived and is operating in a large metropolitan area. In fact, several companies are now using the basic idea. It is a flexible program and has sufficient merit to be used by manufacturers, distributors, contractors and utilities on both a local and a national level. We just tell our customers to have their lighting planned before they buy it. That makes good sense. No one can argue with it and every branch of the industry can support it. If you are going to buy one fixture or two hundred fixtures, have a plan made. You can have

it made without cost, "for free," and without obligation. You don't have to use the plan, but isn't it worthwhile to have a plan made before you buy "just fixtures" from any peddler who comes down the street? Thus, Jones Dry Goods Store would say to the salesman, "Maybe what you say is true, but I am going to have a plan made before I buy fixtures. I am buying lighting."

In the residential market important help to the promotion and sale of planned home lighting will be obtained from the CLM—Certified Lamp Makers Program (the successor to the I.E.S. Certified Portable Lamp Program) and from the AHLI, American Home Lighting Institute fixture certification program. However, the individual pieces of equipment are only part of the home lighting story. To use the new types of equipment, new light sources and new techniques and use them properly, home lighting also must be planned. The types of certified equipment will be important in filling some of the specifications called for in the plan.

When built up properly and executed effectively, "Planned Lighting" infers "guaranteed good" lighting. It's an implied certification. It has great customer appeal and can be a strong promotional weapon.

And so for all our markets—homes, stores, offices, schools, factories—we can apply the same theme straight across the board—"Planned Lighting." Thus, we have a standard-bearer which can lead all branches of the industry to the development of this market on a scale never before thought possible.

### How Does it Solve the Problem?

Of course, before we can appeal effectively to our customers we must orient our own thinking.

We always have maintained that selling illumination means a great deal more than "just selling fixtures." We talk about high-intensity lighting, good quality lighting, the opportunity that exists. However, checks in metropolitan areas disclose that most fluorescent jobs are poor installations.

We must ask ourselves (regardless of which branch of the industry we represent): "will I really try to sell quantity and quality lighting to my prospects or will I just like to talk about it, occasionally citing an outstanding installation (which the customer may have bought and I really didn't sell), making a big ballyhoo about a few good jobs which should be common practice?"

### The Plan Appeal to Customers

After orienting our own thinking we can apply the "Planned Lighting Program" to our customers. In general, we have two types:

1. The type who are planning to buy fluorescent—the new, modern way of lighting. We must tell them not "to guess" or "to buy a pig in a poke," but to have a plan made before they buy.
2. The second group includes those customers who must be sold from scratch. They are not planning to change their lighting. The fluorescent "bug" has not hit them. In order to sell them better lighting we must continue to recite our sales story in terms of user benefits in a most enthusiastic manner and, while every irresponsible salesman in town can tell that same story and can add to that a "discount" story or a "less cost of operation" story, he probably cannot make a plan.

Thus, by stressing the need for a plan, by telling our customers that it's just good sense to have a plan made before they buy, may stop hasty, unwise purchases of light installations.

That's the concept of the Planned Lighting Program and that's how it solves the problem. We have the "Planned Lighting Program" as a prescription to cure our ills, as the antidote to offset the poisoning effect of unsound organizations and irresponsible people selling the market short, adversely affecting all branches of the industry with the biggest loser being the user, our customer. We have the "Planned Lighting Program" to boost our lighting loads to record heights and to give our customers greater use satisfaction than they ever enjoyed before!

### The Execution of the Program

There are many phases involved in the successful operation of such a program but most of them can be grouped under two general headings:

1. The sales efforts of the utility.
2. The activities of other branches of the electrical industry.

### Sales Efforts of Utilities

Of course, the important part of any program is the people involved. The most important person in this program is "The Man Who Plans," or in some cases, "The Woman Who Plans." We must train our representatives, engineers and salesmen so that they can do their part. Their training must cover both the technical and sales angles. We surely now have the tools to do this. The EEI Sales Training Course, and such industry courses on lighting as Westinghouse and G.E. have provided, permit us to have better trained personnel than ever before. Our people should add prestige to the program and inspire confidence with every contact they make.

### Sales Efforts of Other Branches of the Industry

Sales efforts of other branches of the industry, on both a local and national level, must support this program to make it successful. Such sales effort includes product advertising and personal contacts. The manufacturer can feature Planned Lighting in his advertising. For instance, "Buy Planned Lighting." "Don't guess." "You can be sure of lighting results if you use XYZ bulbs and have your lighting planned before you buy." "Consult our district office or your local light and power company." The manufacturer also should train his men to tell this story.

Trade groups such as NEMA, RLM, Fleur-O-Lier, CLM and AHLI can help the program and obtain tangible results for themselves.

Wholesalers, jobbers, dealers and contractors can train their people or can refer prospects to those in the community who are properly trained. Utilities should be in a position to make planned lighting layouts for other local branches of the industry, at least until such a time as they train (with the utility's help if necessary) their own personnel to render this service. Of course, the jobber, dealer or contractor who initiates the job would be given the justified cooperation by the utility to obtain an order for his equipment. Many contractors would be proud to submit a well designed "planned lighting layout" to their customer. If he needs help, make the plan for him. If he desires, put his name, not yours, on it. The electrical contractor in every community, large and small, is one of the most important keys to the success of this program.

### The Promotional and Advertising Effort to Support the Program

After recognizing the need for this program and developing the machinery to accomplish it, we must tell our customers that this service is available and

sell them on the idea of taking advantage of it. We must have a promotional program, including advertising and other sales helps. We must establish the idea of "Planned Lighting" and we must introduce and build up "The Man Who Plans", or "The Woman Who Plans."

After giving full recognition to all that I have said previously, the Edison Electric Institute through their various committees decided that this is a "must" —that in view of the conditions, one of the most important commercial responsibilities which they have is to sponsor a coorodinated, all-industry "Planned Lighting Program." The EEI committees worked long hours creating and developing important parts of this program. These committees consist of many men (leaders in the industry) who have contributed their time, talents and energy to this program. I would like to name them but time will not permit.

Many men also worked hard on committees of the Better Light — Better Sight Bureau to develop educational material which is a necessary and important part of a Planned Lighting Program.

Rather than duplicate the work of other groups, the EEI also called on I.E.S., NEMA, NEWA, CLM, AHLI, on the manufacturers and on other organizations to obtain their ideas for this all-industry program. Without exception, all groups responded in a very gratifying manner. Thus, the EEI is prepared to present to you an all-industry program that *is* an all-industry program with one theme, one standard-bearer, "Planned Lighting," which is the banner which will lead all of the legitimate, important factors in the lighting industry.

**Here is What the EEI Planned Lighting Promotional Program Includes**

1. It outlines markets, types of organization and suggested sales and promotional methods for each of the five major lighting markets—homes, stores, factories, schools, offices.
2. It provides educational and sales promotional material:
   a. Which emphasizes "Planned Lighting" and builds up "The Man Who Plans" or "The Woman Who Plans."
   b. Which are especially designed for use in each market.
   c. Which are available at prices much lower than if prepared and printed locally.

3. It ties in all of the worthwhile materials and ideas which have been developed or prepared by various manufacturers, trade groups or utilities which might aid in the promotion of planned lighting.

An over-all plan book which explains the entire program has been sent to the chief executives of light and power companies.

Complete programs are being prepared for the five markets previously mentioned. Let's consider one example, the Store Lighting Market, which includes:

1. A plan book prepared for executives and department heads. It outlines the background and thinking with respect to the application of the Planned Lighting Program to Stores and includes samples of all of the advertising and promotional material. It gives organization and operating suggestions and will be a helpful guide and reference to those utilities who adopt the program and organize to execute it.

2. Promotional material of various types such as:

   a. *Direct Mail* — Twelve direct mail pieces are included as this very important market requires monthly mailing pieces. Six major type pieces are alternated with six minor "reminder" type mailings.

   b. *Consumer Booklet* — The Consumer Booklet will contain new lighting ideas. It will serve as one means of obtaining leads from the direct mail and can be used to set the stage for a follow-up call.

   c. *Visualizer* — After the planned lighting appeal or the desire for the booklet brings in return cards, the salesman has a prospect or at least a "suspect" on whom to call. To aid him with his sales presentation a visualizer will be provided which will help keep the sales story "on the beam" and prevent the "forgetting" of important sales points.

   d. *Planned Lighting Layout Form* —If the salesman is successful in having the customer agree to having a plan made and the installation is small, he may make the planned lighting layout "on the spot." If it is a larger, more complicated job, he does it back at the office or refers it to illuminating engineers if such are available in the company. In order to aid him in the preparation of a planned lighting layout and to permit him to make a presentable appeal and recommendation to the customer, a Planned Lighting Layout Form is included with the promotional material.

After making the layout, the "Man Who Plans" obviously attempts to sell the job with the support of the contractor and other branches of the industry. He continues his effort until the lighting installation is burning and rendering satisfactory service to the customer.

This material, plus a hundred and one other sales and advertising helps developed by the various manufacturers and utilities for the promotion of "Planned Lighting" should permit you to do the kind of a job which can be done. A complete bibliography of all types of available material with suggestions as to how they can fit into the program is included in the plan book.

All themes, slogans or ideas which were helpful in sparking programs in the past, regardless of the originator, will be incorporated in this over-all industry program. I also want to call your attention to an important help to the entire activity—the I. E. S. Handbook which should be available in October.

Material for the "Planned Lighting Program for Stores" will be available soon. Programs for the other markets are being developed and plan to be available by July 1. The other programs include offices, schools and factories for each of which there will be a "how" plan book, direct mail, special editions of the Better Light — Better Sight

News, a consumer booklet, a visualizer and a Planned Lighting Layout Form.

### Planned Residential Lighting Program

The residential program is divided into two major parts:

1. An educational and promotional program directed to the existing and the new home market.
2. A school project aimed toward the objective of assisting those concerned with the teaching of "Light and Sight" in the public schools.

The sales material directed to the new home market will include a prospectus for speculative builders, a booklet containing information on lighting and wiring, and direct mail pieces for new home builders. The existing home market will be covered by booklets which contain lighting ideas to modernize existing homes, direct mail pieces or "pass out" pieces which can be distributed at company offices, dealers, stores or other locations.

To aid in the educational program of selling Better Light—Better Sight, booklets, motion pictures, slide films, newspaper and radio advertising ideas, magazine and newspaper publicity and outlines of lectures and demonstrations will be included.

Sales tools included as part of the residential program will feature exhibits, demonstrators, and helpful gadgets of various types. A sales training film on home lighting will be prepared to tie in with the EEI Sales Training Program. Point of sale merchandising material including a plan book, and other sales helps will be prepared for use in lamp and fixture stores, department stores and "sunshine" shops.

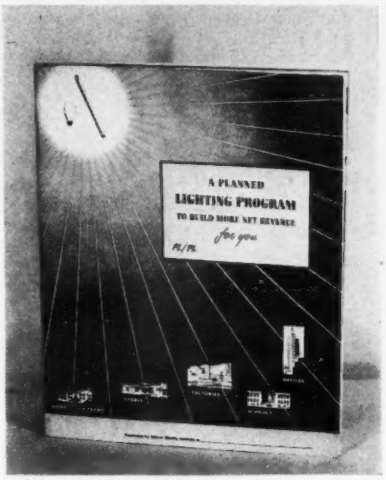
### Assurance

Everyone in the industry can be assured that this is a good program. The best tools ever developed are made available. The ideas and materials have been originated and prepared by some of the most experienced and talented people in the industry. These recognized talents, plus a lighting-wise advertising agency, have been fused to give this program the benefit of the work of experts who cumulatively have had hundreds of man years of experience.

We really have something! The problem is, are we equal to the task of executing it.

### Value

In conclusion, let's summarize a minute. From this program we get:




*Overall Plan Book for Planned Lighting Program*

1. A coordinated, all-industry approach.
2. Fused sales and engineering talents.
3. Greater customer satisfaction and improved public relations.
4. Increased electrical energy sales resulting from the effective program and the industry cooperation. PL Means PL — Planned Lighting Means Profit Load.
5. Increased sales results for the manufacturers of light sources and lighting fixtures, for the distributor, the contractor and the dealer.
6. A means of combating the negative efforts of irresponsible representatives of unsound organizations selling lighting equipment.
7. And most important — "without charge" the use of the "Planned Lighting" concept and "The Man Who Plans."

### Cost

I would expect many of you are allocating in your minds anywhere from twice to 10 times the amount of money the materials included in this program will cost. Such a program would be very expensive for any one company but on a syndicated volume basis material can be made available at costs that are one-half to one-tenth that of similar (not comparable) materials if prepared by the individual company. For example, some pieces which are priced at 5 cents would cost 25 cents if produced locally. Detailed prices of all material will be included in the plan books.

The Edison Electric Institute, being cognizant of the need for a special lighting program to cope with unusual conditions, were so impressed with this solution that they have underwritten the financial requirements to make the program possible.

Likewise, the Better Light—Better Sight Bureau have underwritten the cost of a most necessary lighting educational program.

A minimum of one-third of a million dollars (to say nothing of the time and effort of individuals) is being actually invested to permit this presentation to be made to you today. I estimate the total material worth of this program, placing a conservative value on the voluntary services of industry employees, to be at least a half million dollars. Follow-up advertising and publicity by manufacturers and trade groups probably will add several millions of dollars to the investment in the promotion of this program. It has been brought to this point without demanding *any* monetary risk on your part. A Bargain on a Silver Platter.

We probably can also assume that anything one individual company can prepare, regardless of how talented their own local people or their staff may be, will not be equal to what can be prepared by the fused talents of experts from all branches of the industry.

The time to buy this material and ready your organization is *now*. A long time is usually required to develop momentum in your own organization and in other branches of the industry in your locality. Time is also required to create an impression on your customers. The probabilities are that by the time you have this program rolling in your community your other problems of capacity, finances or labor will not be nearly so acute. Unless you get started now you may find even more serious problems than any of you are facing today confronting you a few years from now.

Plan books and samples of materials developed for each market will be sent you as soon as they are prepared. In order to determine quantities required, to ease the underwriting investment and to effect prompt delivery of material, we will need your order as promptly as possible afer you receive the plan book and samples. Thirty days or less would be helpful; a week or less would be still more helpful.

The success of this program, on both a national basis and a local level, depends upon you. This is the 1947-1948 program. This is the program of The Electric Industry.

It's up to You!

# The Heat Pump as a Load Builder

By A. C. Crandall

*Vice President, Indianapolis Power & Light Company*

An address presented at the 13th Annual Sales Conference of the EEI, at Chicago, Illinois on April 2, 1947

CONSIDERATION of the heat pump as a load building appliance requires quite a bit of mental adjustment for many of us who for years have been accustomed to gauging new appliance load in terms of small appliances, ranges, refrigerators, and water heaters, because in the heat pump we are adding new load in terms of several thousand kwhr per year for each installation, or several times the consumption of these older appliances.

No other domestic appliance, at a comparable stage in its development, has stirred such a volume of public interest as the heat pump. This is understandable because it represents a truly revolutionary means of complete air conditioning in the home.

Perhaps the most interesting and constructive contribution that we can make to the subject, "The Heat Pump as a Load Builder," is to show you the results of two years' successful operation of a heat pump in our city with which we have been very closely connected.

Early in 1945 Mr. R. C. Webber, Supervisor of the Appliance Service Department of our Company, approached Mr. H. T. Pritchard, our president, with a brand new idea in connection with heat-pump operation. His idea was to take heat directly from the ground by burying copper tubing through which a refrigerant is circulated. This appeared sound, and Mr. Webber was so sure of its success and so enthusiastic about it, that he proposed to design, construct and install a pump in his residence and stake his family's comfort on its successful operation. Mr. Pritchard had for a long time been keenly interested in the heat pump both as a load building appliance and as a means of providing a new and superior service to the home—so a basis of cooperation was agreed upon and work started.

To accomplish the greatest operating economy, the condenser coils were placed in a 125 gal steel water tank. From this tank the water was circulated under pressure through individual radiators installed in the existing hot air registers in the floor. At each register a separate fan was mounted horizontally under the radiator for forced air circulation. This job operated well and with good efficiency for the balance of the heating season, however it was evident, after short operating experience, that no water storage was necessary and that adequate heat could be taken from the ground and delivered directly through warm air ducts to the heated space. This direct method would reduce heat transfer losses, eliminate the water circulating pump and, by making it possible to circulate greater air volume, maintain a more even temperature throughout the house.

In the summer of 1945 the water system was removed and the present earth-to-air unit installed. This unit has operated continuously through the heating season of 1945-46 and thus far through the heating season of 1946-47 without any changes except pressure adjustments and increase in the volume of air circulated. Satisfactory change-over valves were not available last summer so the unit has not been operated on the cooling cycle except for short periods when it could be operated manually. The short test seems to indicate that it will perform just as satisfactorily on the cooling cycle as it has during the heating seasons.

Considerable information in connection with the operation of this unit has been published, however, even though it may be repetition to some, we would like to present the highlights of the unit's performance.

The area of the house in Fig. 1 is 31 ft x 28 ft with five rooms downstairs and one upstairs. The first floor has about 7,000 cubic feet, while the basement has approximately 6,000. The heat load, using A. S. H. V. E. constants, is 38,193 Btu per hour for a design range of —10 to +70 F.

Fig. 1—A photograph of Mr. Webber's house which stands on an area 31 ft x 28 ft with 5 rooms downstairs, and 1 upstairs. The house is equipped with storm windows and doors, and 2-in. zonolite insulation roof and sides.

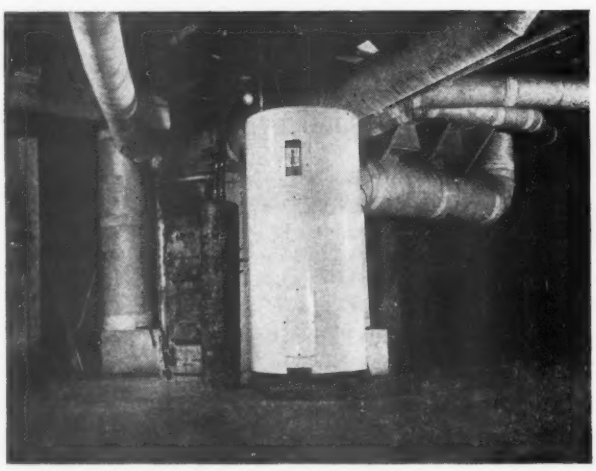


Fig. 2—The basement to Mr. Webber's house is shown before the installation of the heat pump. Contrast this with the condition after the heat pump replaced the coal furnace in Figs. 3 and 4 on page 115.

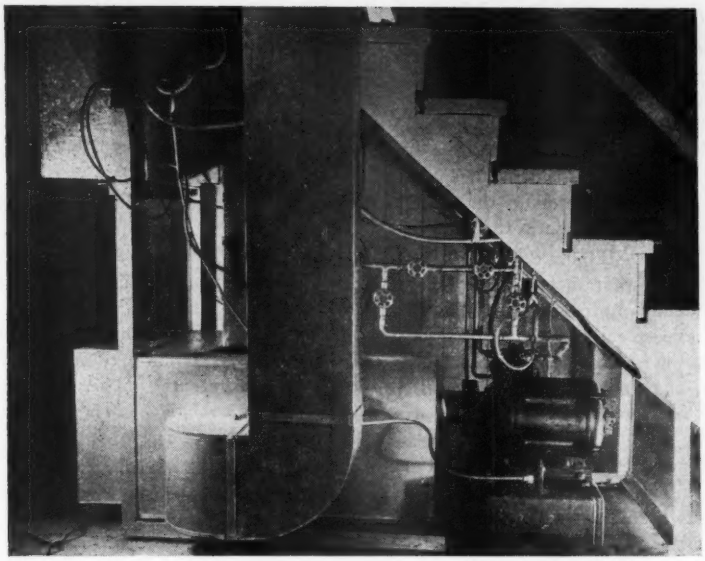
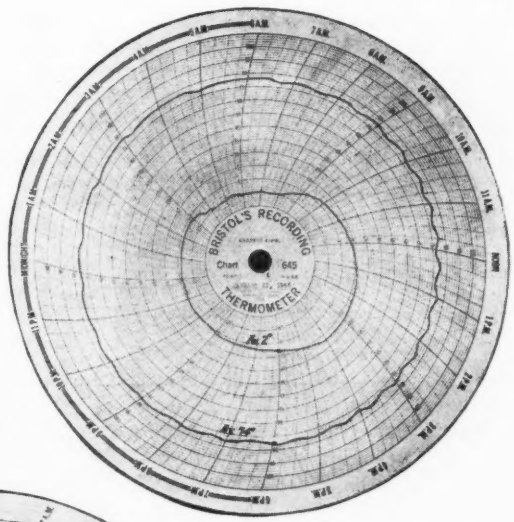


Fig. 3—The installed heat pump showing the 3-hp motor and compressor assembly mounted on a base outside the fan housing. The vertical pipe in the foreground is a duct from the cold-air outlet on the first floor. The boxes on the left, top and bottom, house the condenser units.

Fig. 4—Front view of the unit showing the vertical duct opposite the one shown in Fig. 3 as it comes from the cold-air outlet on the first floor into the bottom condenser housing. The rectangular ducts on the ceiling carry hot air from the condenser to the various rooms on the first floor.

Fig. 5—Temperature chart taken in Mr. Webber's living-room on the coldest day of the 1945-46 heating season, January 22, 1946. Note that the outside temperature was as low as 10 F for some time, although the temperature inside remained within two degrees of the 74 F thermostat setting. This is a comfort story and, from the standpoint of the inside temperature, is typical of the daily charts taken throughout the heating season.



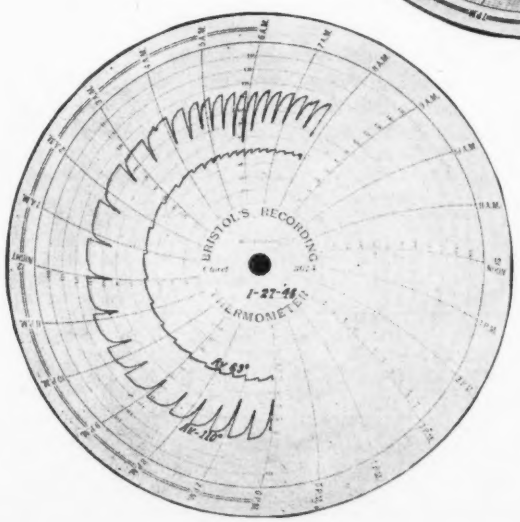




Fig. 6—A temperature chart of the air entering and leaving the condenser while the compressor and fan are operating. The chart was connected in such a way that it operated only when the compressor was running. The outside line shows the temperature of the air entering the first floor rooms at an average of 110 F, while the air returning to the pump averages 69 F. Velometer measurements at both the cold and hot air ducts indicated that there was 46,200 cu ft of air circulated per hr, which is equivalent to 6.7 changes per hr during the time that the unit is in operation.

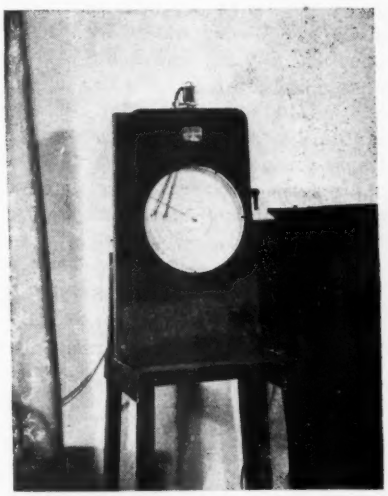


Fig. 7—Temperature recording instrument located on an outside wall opposite the living-room, while the control thermostat is on an inside wall of the adjoining dining-room. The tube running back of the curtain goes to the bulb located outside the house. The bulb for the inside temperature is located on top of the instrument.

Table I is a summary of the heat pump operation in Mr. Webber's home between October 1, 1945, and May 31, 1946. The average outside temperature was 42.7F while the inside was maintained at an average of 74F. The 7,600 degree days was calculated from the actual inside and outside temperatures day by day. As a result they are greater than

TABLE I—HEAT PUMP RESULTS FOR OCTOBER 1, 1945 TO MAY 31, 1946

| | |
|---|---|
| Average Outside Temperature | 42.7° |
| Average Inside Temperature | 74° |
| Total Degree Days | 7,620 |
| Total Compressor kwhr | 6,013 |
| Total Fan kwhr | 344 |
| Total kwhr Use | 6,357 |
| Kwhr Per Deg. Day | .835 |
| Compressor Running Time | 1,630.68 Hrs. |
| Btu to First Floor | 49,592,000 |
| Btu to Basement | 28,896,000 |
| Total Btu to Home | 78,488,000 |
| Total Btu Electric Input | 21,714,000 |
| Coefficient of Performance | 3.61 |
| If Compressor kwhr only is considered. Coefficient of Performance is | 3.82 |

those published by the Weather Bureau, which are based on 65F inside temperature. The total kwhr consumed by the pump for the season was 6,357, made up of 6,013 for compressor operation and 344 for fan operation.

Calculating the Btu input into the house by means of temperature recording equipment and velometer measurements, and estimating the heat loss of the basement (A.S.H.V.E. formula), showed 78,488,000 Btu put into the house during the heating season, with a consumption of 6,357 kwhr. These kwhr, times 3,412 Btu per kwhr, would furnish 21,714,000 Btu. Dividing this figure into the total heat units delivered, we find the heat input 3.61 times as much as the combined electric input to the compressor and fan motor.

The unit was not operated during the summer of 1946, except for a few short periods, because we were not able to secure the necessary change-over valves in time to get a season's operation. We estimate the cooling season would require approximately 720-hr use of the compressor, plus about 1,260 hr additional use of the circulating fan. This would mean a consumption of 1,692 kwhr which, at 2 cents per kwhr (the rate at which this unit is being served), would make summer cooling energy cost approximately $34.00. Adding this to the heating season's consumption—makes a year around energy cost of approximately $160.00 or $14.25 per month.

Table II is a comparison of the performance of the heat pump for the heating season of 1945-46 with the season of 1946-47 up to March 10, 1947.

You will note that so far the present season shows an improved performance, which we expect will continue for the balance of the season. The equipment hasn't been changed in any manner, although the fan speed has been increased slightly this winter. The unit has carried some additional load during the present winter because the second floor bedroom has been in constant use, and heated by an open stairway.

Table III shows a comparison of the estimated heat loss and the actual heat input for the season. Note that the estimated Btu heat loss for the house, based on A.S.H.V.E. method of calculating, is 11,472 Btu per degree day—or a total for the season of 87,400,000. The actual heat input to the house, calculated as previously explained, is 78,488,000. In addition it is calculated that heat from refrigerator, electric range, deep-freeze unit, lights and general electric service, approximated six kwhr per day, or a total of 5,000,000 Btu for the season. Adding this to the heat input shows a total of 83,488,000 or 4.69 per cent less than the calculated heat loss of the house on a degree day basis.

TABLE III—COMPARISON OF EST. HEAT LOSS WITH ACTUAL FOR SEASON OCT. 1, 1945 TO MAY 31, 1946

| | |
|---|---|
| Total kwhr Used | 6,357 |
| Total Degree Days | 7,620 |
| Estimated Btu Heat Loss at 11,472 Btu per Deg. Day | 87,400,000 |
| Actual Heat Input to Home | 78,488,000 |
| Btu Input from other elec. use in home at 6 kwhr per day | 5,000,000 |
| Total Actual Heat Input to Home | 83,488,000 |
| Excess of Estimate over Heat Input | 3,912,000 Btu |
| Percent excess of Est. over Heat Input | 4.69% |

Table IV is the monthly record of the pump's operation. You will notice that there is a variation of kwhr per degree-day with the varying outdoor temperature during the heating season which, of course, makes a difference in the coefficient of performance in a range from 3.36 to 3.91. This may be due, in part, to the difference in Btu per degree-day input as shown in the last column on the right.

Table V shows the running time and load factor during the heating season—in other words the percent of running time to the entire lapsed time, since the load remained the same at all times. Note that December shows the highest load factor, for any one month, of 50.2 per cent. I might add further that during the coldest day of the winter, when the temperature was —10F for about five hr, and the average for the entire day was +2F, the running time of the pump was 15.6 hr out of the 24. Load factor will, of course, vary with the size of the unit in comparison with the maximum heat loss of the house and outdoor temperature conditions.

TABLE V—MONTHLY LOAD FACTOR

| | Run Time | Load Factor |
|---|---|---|
| Oct. '45 | 138.00 | 18.5% |
| Nov. '45 | 268.50 | 37.3 |
| Dec. '45 | 373.30 | 50.2 |
| Jan. '46 | 343.07 | 46.1 |
| Feb. '46 | 253.46 | 37.6 |
| Mar. '46 | 119.42 | 16.1 |
| Apr. '46 | 94.20 | 13.1 |
| May '46 | 40.73 | 5.5 |
| 243 Total | 1630.68 | 28.0% |

Adding the calculated kwhr consumption for the cooling season, and the operating time of both the compressor and

TABLE II—HEAT PUMP RESULTS FOR OCTOBER 1, 1945 TO MAY 31, 1946 COMPARED WITH RESULTS FOR OCTOBER 1, 1946 TO MARCH 10, 1947

| | Season of 1945-46 | Season of 1946-47 to March 10th |
|---|---|---|
| Average outside temperature | 42.7° | 39° |
| Average inside temperature | 74° | 74° |
| Total Degree Days (74° base) | 7,620 | 5,649 |
| Total kwhr used (Comp. & Fan) | 6,357 | 4,530 |
| Kwhr per Deg. Day | .835 | .802 |
| Coefficient of Performance | 3.61 | 3.77 |

TABLE IV—MONTHLY RECORD OF HEAT PUMP

| | Average Outside Temperature | Average Inside Temperature | Degree Days | Total Kwhr Used | Kwhr per Degree Day | Coefficient of Performance | Total—M—Btu Input to Home | Btu per Degree Day Input |
|---|---|---|---|---|---|---|---|---|
| Oct. '45 | 51.4 | 73. | 671 | 418 | .62 | 4.05 | 5790 | 8620 |
| Nov. '45 | 42. | 73. | 935 | 815 | .87 | 3.91 | 10999 | 11750 |
| Dec. '45 | 23.7 | 73. | 1525 | 1459 | .96 | 3.67 | 18272 | 12000 |
| Jan. '46 | 28.2 | 73.8 | 1415 | 1435 | 1.01 | 3.43 | 16852 | 11900 |
| Feb. '46 | 32. | 74. | 1179 | 1132 | .96 | 3.36 | 12983 | 11000 |
| Mar. '46 | 51. | 75.3 | 758 | 527 | .70 | 3.68 | 6626 | 8730 |
| Apr. '46 | 53.1 | 75.2 | 662 | 406 | .61 | 3.49 | 4814 | 7280 |
| May '46 | 59.1 | 74.4 | 475 | 165 | .35 | 3.80 | 2152 | 4530 |
| Av. or Total | 42.7 | 74. | 7620 | 6357 | .835 | 3.61 | 78488 | 10300 |

the circulating fan, we estimate that the summer consumption would be 1,692 kwhr which, added to the operation during the heating season, would result in a load factor of 23.6 per cent.

Table VI is a summary of the installed earth coils. There is a total of approximately 700 ft, in 100 ft lengths, of ¾-in. copper tubing through which the F22 refrigerant is circulated. On the chart this is considered the primary radiation. The secondary radiation consists of ⅝-in. copper tubing 24 in. long, welded at right angles to the primary coils and spaced about 18 in. apart. The coils were buried at depths of from 3 to 6 ft in three different trenches.

TABLE VI—COIL RADIATION CAPACITY

| | | |
|---|---|---|
| #1 — 4′ 6″ deep | Primary | 19.64 sq. ft. |
| #2 — 3′ deep | Primary | 19.64 sq. ft. |
| | Secondary | 10.8 sq. ft. |
| 4′ deep | Primary | 19.64 sq. ft. |
| | Secondary | 10.8 sq. ft. |
| #3 — 5′ deep | Primary | 19.64 sq. ft. |
| | Secondary | 10.8 sq. ft. |
| 6′ deep | Primary | 19.64 sq. ft. |
| | Secondary | 10.8 sq. ft. |
| #4 — 5′ deep | Primary | 19.64 sq. ft. |
| 6′ deep | Primary | 21.2 sq. ft. |
| | Total | 182.24 sq. ft. |

Maximum capacity air circulated first floor 46200 cu. ft. per hr.
Maximum capacity temperature rise 118F —69F = 49F.
Maximum Btu = 46200 x 49 = 41200 Btu per hr.

$$\frac{41200}{182.24} = \frac{55}{226}$$ Btu per sq. ft. coil per hr.

If primary radiation only is used
Btu per sq. ft. = 296 Btu per sq. ft. per hr.

At various periods through the winter there was water and ice surrounding part or all of the coils, but at no time was there any evidence that the coils were insufficient for the heat requirements of the house—on the contrary there was evidence that there was capacity beyond requirements. Although in this installation these coils, which delivered a maximum of approximately 60 Btu per lineal foot, proved entirely adequate, it is evident that considerable research and experience will be necessary in order to determine the exact size, design and type of ground coil for each soil condition.

Fig. 8 is a heat pump calculation chart developed by Mr. Roy Thurman, of our company, as an effective sales tool and a big time-saver for the salesman. Heat-pump selling will bring requests for estimates—not only from genuine prospects but from many who are motivated simply by curiosity.

Knowing the heat loss per hour, of the building to be heated, the sales engineer can, from this chart, give the prospect a quick estimate of the season's heating cost.

Let us follow the example shown by the heavy line in the chart. We start with an hourly heat loss of 60,000 Btu, as shown on the lower left hand scale, go across to the design range of 80F up to the coefficient of performance—in this case 3.5—then across to 6,000, the total degree days in the season, and down to 1½ cents, the rate per kwhr; then to the right hand margin where the energy cost per season can be read—$135.00 in this example.

TABLE VII—METHOD OF ESTIMATING APPROXIMATE HEAT LOSS PER HOUR IN RESIDENTIAL BUILDINGS

| Design Range Maximum Temperature Difference in Degrees | Btu Required per hr per cu.ft.* | | |
|---|---|---|---|
| | Thoroughly Insulated House | Moderately Insulated House | Standard Construction House |
| 100 | 4.5 | 6.25 | 8.75 |
| 90 | 4.0 | 5.6 | 7.9 |
| 80 | 3.5 | 5.0 | 7.0 |
| 70 | 3.0 | 4.4 | 6.1 |
| 60 | 2.6 | 3.75 | 5.25 |
| 50 | 2.2 | 3.1 | 4.4 |
| 40 | 1.75 | 2.5 | 3.5 |
| 30 | 1.3 | 1.9 | 2.6 |

1. Thoroughly insulated house has storm doors and windows, insulated ceilings and side walls.
2. Moderately insulated house has storm doors and windows and ceiling insulation.
3. Standard construction has no special insulation of any kind.
* This should include basement.

Table VII gives a quick method of estimating the approximate heat loss per hr in a residence. By its use as a supplement to the calculation chart, the salesman only needs to know the cubic contents of the building to be heated and whether it is insulated either moderately or thoroughly, or not at all. A more accurate heat loss figure may be determined by using the A.S.H.V.E. method and probably should be done, at least with the early installations in any locality, especially in estimating the amount of earth coil needed, the size of the compressor, etc.

Any consideration of the heat pump as a load building appliance should include some idea of its market potential, although an attempt to gauge the market for an appliance with an unknown price, and not even available as yet for sale, is "stepping in where angels fear to tread"—particularly if attempted on a national scale. However, a market

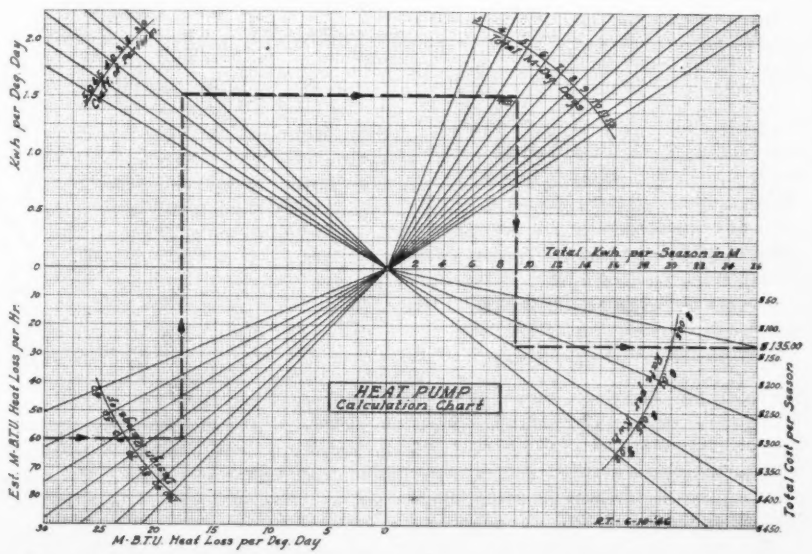

Kwh per Deg Day
Est. M-BTU Heat Loss per Hr.
M-BTU Heat Loss per Deg Day
Total Kwh per Season in M
Total Cost per Season
HEAT PUMP
Calculation Chart
R.T. - 6-10-46

Fig. 8—Heat pump calculation chart developed by Mr. Roy Thurman of the Indianapolis Power & Light Company for the use of sales engineers to estimate a prospect's season heating cost from a known heat loss per hour of any building.

analysis of the area served by our company may be interesting—even if it is not applicable elsewhere. This analysis covers five years because, after weighing all the factors, this appeared to be the most logical period.

Perforce, our analysis contains a good many assumptions. To start with we are assuming that a unit will be available within the next 12 to 18 months in fair supply and at an installed price not too far above the cost of other types of automatic heating equipment and considerably lower than the combined price of two automatic units—one for heating, and one for cooling and air conditioning. The material cost alone of the Webber unit was about $500.00. This may constitute a slim clue as to the cost of a unit of comparable size, produced on a commercial scale.

Operating costs will have some affect on the number of units sold but we do not feel that this is a major point of sales resistance, considering the tangible and intangible advantages which the heat pump brings to the home.

The first step of our analysis was to decide the class of home which could reasonably be considered as a heat-pump prospect. We decided that it would be a home valued at $9,000 and up at 1947 prices. New homes of this class, whether owner-occupied or rented, we believe will be heat-pump prospects. Rental prices will be adjusted, if necessary, to provide heat-pump service which the renter will demand, but among existing homes the prospects will be confined chiefly to those that are owner-occupied.

According to the 1940 Census there are, in the area served by our company, approximately 8,550 owner-occupied homes which, at today's price, would be valued at $9,000 and up. In addition the local building industry estimates that about 3,500 homes will be built per year, within our service area, for the next five years or longer and that 60 per cent of these, or 10,500 will cost $9,000 and up. This gives a total of 11,355 heat-pump prospects, including both existing and new homes.

We believe it is conservative to expect that, of these prospects, 10 per cent of the existing homes, or an average of 2 per cent per year, and 25 per cent of the new homes, or an average of 5 per cent per year, will purchase a heat pump. This would mean 3,480 heat-pump installations in the five-year period, giving a saturation of 2.5 per cent of the then total residence customers on our lines.

We estimate the year around operation of the heat pump in our locality will average about 9,000 kwhr. Multiplying this by 3,480 units would add an annual increase of 31,320,000 kwhr for heat-pump service. This is equal to 17.4 per cent of the total residence kwhr sales in 1946. This is a good start toward that goal we heard so much about a year or two ago—that the utilities should double the average domestic use in five years after the war.

In addition to the increase in kwhr sales, we are all interested in the effect of the heat pump on distribution and plant capacity. As far as we know, there is little or no data on this subject now, however we can make an interesting observation on this question of demand from information recently given to us by Mr. McMicken, General Sales Manager of the Portland General Electric Company, in connection with the operation of approximately 30 houses, served by his company, equipped with resistance-type central heating furnaces. These houses average about 10,400 cu ft each, with an average connected load per system of 16.4 kw. The maximum coincident demand of this group of furnaces was 9.5 kw per unit, while the coincident demand at the time of the system peak (January 14, 1947) was 6.7 kw. From the standpoint of demand, it would seem reasonable to assume that the heat pump and the resistance-type central furnace would be very similar, because both units deliver practically instant heat, when the thermostat calls for it, and neither of them have any appreciable storage capacity. Therefore, had these homes been equipped with heat pumps, having a coefficient of performance of four for instance, the maximum coincident demand would be in the order of 2.5 kw and the coincident demand at the time of system peak would have been about 1.7 kw per installation. If this assumption is correct, the effect of heat-pump operation on system demand will not be serious—at least in relatively mild climates. Heat-pump demand will, of course, differ in various localities because of climatic conditions, size of installations, performance coefficient, living habits in the area and other factors.

Although it is perhaps natural for us to stress the load building potential of the heat pump for space heating and cooling, we should not overlook the load-building potential as well as other advantages of the heat pump applied to water heating, especially in view of the low national water heater saturation after 15 or 20 years' promotion on the part of the industry.

If the manufacturer can produce a heat-pump water heater at an installed price to the customer, not too far above the price of a resistance-type heater of comparable hot water capacity, electric water heating will experience rapid growth in many sections of the country because, with a coefficient of 3 or 4, electric water heating cost will not only be competitive with other methods of water heating but in many cases it will be less, and sufficiently less to justify the higher initial cost of the heat-pump heater.

The heat-pump water heater will have a low demand and a splendid load factor yet it can operate unrestricted on the house service, therefore will require less storage capacity than resistance heaters of comparable hot water capacity. It should reduce, if not eliminate, the necessity of off-peak water heating service and special rate provisions for water heating. It will save the investment, servicing and maintenance of separate meters and control equipment now required by off-peak water heater service —also the separate meter reading and billing of this service.

The low kwhr consumption of the heat-pump water heater means, of course, that it will take three or maybe four units to equal the kwhr consumption of an average size resistance heater. However, the ability to provide electric hot water heating service at or below the cost of that service by competitive fuels should make it possible to sell even a higher ratio of heat-pump water heaters.

In addition to the load building value of the heat pump for space and/or water heating, we should not overlook its influence in stimulating the sale of electric ranges, automatic laundry equipment, dishwashers and other major electric appliances. The extent of this influence is beyond calculation, however it is safe to assume that in nearly every home, particularly new ones, equipped with a heat pump—most if not all of these appliances will be in use. In the case of new homes the heat pump and all of the other major appliances will undoubtedly be financed as part of the house cost.

There is still another value that the heat pump brings to our business, although not in the form of kwhr or direct revenue. It is a new and dramatic interest not confined to the domestic field alone because there are many heat-pump applications in both the commercial and industrial fields. Nor will this new in-

(*Continued on page* 122)

# Go All Electric — The Modern Way

By J. R. Poteat
*Chairman, NEMA Campaign Committee*

**An address before the Residential and Home Service Section, EEI, at the Annual Sales Conference held at Chicago, Ill., on April 1, 1947**

I THINK I should consider myself particularly honored to have the privilege of making a progress report on our first new cooperative enterprise following the interruption of such activities by the Second World War. And it is a pleasing assignment, because to be back in a campaign together is indicative of our complete reconversion from war attitudes and thinking to the concentration on the selling job immediately ahead.

There have been many successful cooperative campaigns in which the electric service companies, the electrical manufacturers, the electrical distributors, and the electrical dealers have joined together; and I believe I express the opinion of all of the members of these groups when I say that our opportunities for success in such activities, are even greater now than ever before.

Late in the fall of 1945 conferences between several leading members of the electric utility industry (including representatives of both your commercial division general committee and the residential section committees) and the manufacturers, developed the idea that it might be desirable to re-analyze our markets to see where we are most vulnerable to competitive influence and to determine the activities which would be most likely to protect our interest in those markets. The importance to the war effort, of the electric utilities, who provided service *without shortages,* and the electric manufacturers — who operated with *nothing but shortages* in everything *except electricity* — made their complete devotion to war, essential.

Thus, the manufacture, promotion, and sale of consumer electrical goods was completely cut-off. It was the feeling of the groups mentioned a moment ago that with the electrical industry out of the consumer goods business, and with the great changes which had taken place in the economic structure of the country, any cooperative effort based on prewar analyses would be out of date and fail to meet the requirements.

The electrical industry is a virile industry, aggressive and promotionally minded. The electric service companies have always assumed the responsibility for the promotion of electrical products with limited public acceptance, and the development of new markets where these products have not been sold before, even before reasonably satisfactory products were available.

For example, when the faltering electric range first came along, it was promoted and sold exclusively by utilities. It took 21 long years to sell the first million electric ranges and yet because of the money that has been plowed in by the utilities to sell the idea of electric cooking, thousands of dealers, electrical and otherwise, are now handling electric ranges. And I doubt if there is anyone in this room who would not accept the idea that to sell a million or more electric ranges in one year should be very easy. We think of washers as having great public acceptance. In 1914 washers were promoted and sold by utilities with free wiring in any unwired home.

### Electric Appliance Advertising

During the latter part of the war the electrical manufacturers undertook the most extensive electric appliance advertising that they had ever carried on. Having been out of the market for three years and knowing the ready forgetfulness of people when they are not constantly reminded of products or services, this effort was undertaken to ready the market for the reestablishment of the business of electrical consumer goods. The accumulation of past effort, which has been reawakened by these advertising programs, plus the new interest that has been created, has, I believe, had much to do with the present demand, particularly for major electrical appliances. In addition, the considerable increase and the substantial shifts in population as well as the development of the suburban and rural areas surrounding the centers of population, plus the competition that has been aggressively at work therein, seem to indicate that with this fast growing market we should prepare ourselves for an effective job there. Hence, the study was directed toward this market.

The "Report to Utility Executives" brochure which was sent out last spring was the first result of this study. It confirmed to us that in the rural and suburban market to which electrical service had been, or will be extended as a matter of course, the average usage of electricity is twice the use in the urban domestic market. It also showed that the maximum development of the possibilities in this market was being retarded by action on the part of purveyors of other forms of energy for cooking—specifically LP Gas—who have already taken over a billion dollars in revenue away from the electric service companies. Domestic LP Gas customers have grown from 5000 in 1926 to 3 million in 1946, a 600 times increase in 20 years. And merchandise to satisfy the requirements of this market in establishing the economy of a single energy source—electricity—has been slow in coming. While this activity has the backing of the entire electrical manufacturing industry as represented by NEMA, as well as EEI, I mention cooking because it is through the cooking stove that the LP Gas distributor makes his play for the original installation.

Conditions such as this were found. In one state 85 per cent of the homes are wired for electricity. But, the number of customers using electric ranges is no greater than those *in wired homes* who use liquid petroleum gas for their cooking. A utility in another state surveyed 2500 new customers on new electric lines and found approximately half of them cooking with liquid petroleum gas. They set about immediately to do something about it.

A well known and large electric service company recently studied the extent of electrical intelligence of their rural and suburban customers. In surveying 28,000 homes, they found that more than 75 per cent of them believed that it costs more to cook with electricity than with liquid petroleum gas. A small

number of the people holding this opinion offered estimates on the cost of electric operation of major kitchen appliances. Their average guess on the cost of cooking by electricity was $5.95 per month. Forty-six per cent of these estimates exceeded $6.00 per month. In other words, in spite of promotional campaigns carried on for the past fifteen years (which, however, had been curtailed during the war) and in spite of continued rate reductions, these domestic customers still greatly exaggerate the cost to operate major electric appliances. The actual cost of electric cooking in this territory is approximately $2.00 per month.

In this same area a total of over 38,000 users of liquid petroleum gas were asked whether or not they had received any information on the use of electricity, prior to the time that they had purchased liquid petroleum gas equipment. Only 16.6 per cent replied in the affirmative.

### Is LP Gas Free From Service Interruptions?

A frequent reason given by LP Gas users for its adoption is freedom from service interruptions. The LP gas man really goes to work to magnify every electrical interruption regardless of its insignificance. I mentioned this to a utility man a couple of weeks ago and he said, "And interruptions are likely to occur more rather than less frequently." If this is true—and I hope it isn't—it is a fundamental problem of greater seriousness than generating capacity, availability of merchandise, or selling plans, since it can nullify them all. But, I was interested to read in a Florida paper of March 4 the following, "Many Jaxons were cooking on the front burner today and not just in slanguage. With no Butane Gas available to some 3,000 Duval county users, and none promised for three or four weeks, housewives were warned today to conserve their supplies, using top burners only." The whole state was in the same shape, attributed by the LP Gas distributors to a shortage of high-pressure tank cars and heavy snows which held up shipments between Oklahoma and Florida. The railroads had no record of delayed cars and pointed out that the LP Gas producers own and provide the cars anyhow.

The research department of a chain of farm papers asked subscribers in five different states to indicate their purchase intentions. Some striking facts were revealed.

In the Dakotas 47 per cent of the respondents planned to wire the home while only 13 per cent planned to buy an electric range and 30 per cent would install LP Gas for cooking.

In Nebraska 32 per cent would wire the house, 16 per cent buy an electric range and 17 per cent LP Gas stoves.

In Minnesota 31 per cent would wire the house, 14 per cent install an electric range and 18 per cent an LP Gas range.

Here, is no lack of financial resource, but far too small a proportion of planned electric range installations as compared to LP Gas.

The LP Gas industry is engaged in a "Go All LP Gas" program. They have even gone so far as to furnish literature to their retailers that boosts the use of LP Gas for home lighting, contending that the spectral analysis of the LP Gas flame more closely resembles sunlight than either incandescent or fluorescent electric light sources. And a good salesman could undoubtedly convince some customers of that alleged superiority, if an equally good electric selling job is lacking.

I give these illustrations to point up the necessity for immediacy in reestablishing electrical promotion in these markets. This is the reason for the "Go All Electric" program.

### "Go All Electric" Program

What is the "Go All Electric" program? The "Go All Electric" program is an activity designed to promote and create an acceptance for a single source of energy—electricity—for use in homes and on farms. Briefly, it consists of a well organized, ready to use campaign plan with all of the devices the electrical industry knows so well how to use, including newspaper advertising, radio, spot announcements, direct mail pieces, counter cards, 24 sheet posters, etc. There are some additional sales tools which are unique to this program. A sound motion picture sponsored by this activity has been prepared by one of the national magazines. This picture is entitled, "Singing Wires" and is available for widespread circulation to consumer audiences everywhere.

In addition, for the first time a handbook for electric appliance salesmen has been prepared. Due to the shortages of paper and the difficulties of publishing, this material which has been ready since November will not find its way into the publisher's schedules until summer. However, this book provides the ammunition necessary to answer questions not only relative to the electrical way of living, but comparative to other methods of cooking and water heating, refrigeration, and lighting, and serves as a very excellent reference book, which should be in the hands of salesmen everywhere.

A slide film, which is based on the details given in the handbook, but for a quick and condensed story is under preparation.

### Results to Date

What have been the results so far?

80 companies have ordered materials—some for internal distribution and some for preliminary samples.

40 have ordered in quantity for use in their territory.

Some have used the material for the preparation of their own program—For example, one fairly large company ordered 25,000 water heater books and printed 50,000 in addition. Comment—They have ordered 330,000 bill stuffers, 75,000 self mailers, 55 sets of indoor posters, 600 sets of store window decals, and 110 24-sheet posters.

More than 50 per cent of the original considerable print order has already been shipped for field use.

A considerable number of newspapers, particularly in the small town and rural markets, have ordered mat services to run, on their own initiative in their columns.

The larger manufacturers have charged their field sales organizations with the job of carrying this "Go All Electric" story into the highways and byways, and personnel has been assigned exclusively to its promotion.

While the use of the materials to tell the electric story has been good considering the short time it has been available, far greater quantities can and will be used as the activity gathers momentum. This completes the outline of the "What" of the "Go All Electric" program.

Now the HOW and WHEN. Every activity should be judged against the three tests of, first—is the activity necessary; second—is this the best way to do

it; and third—is this the best time? The first test—necessity—is well established and certainly obvious to all of us. As to the second test, even the best possible activity, if it were initiated at the wrong time, would probably be unsuccessful. On the other hand, a poorly planned activity, if timely, can accomplish much good. From the results achieved to date, we can be assured that the program is well planned and effective. But there seems to be a question in the minds of some as to the satisfaction of the third test, is it timely?

### Meet Your Competition Now

Ideas are not static. A misapprehension becomes accepted more firmly the longer it goes unchallenged. Strangely enough, misleading or prejudicial information *seems* more contagious than correct information. Prejudice is being down on what you're not up on. Delay in correcting misinformation or wrong attitudes means they become more expensive to change the longer they are allowed to lie (no pun intended) because of their fixity and contagious character. Delay in telling the electric story in this important market means to lose a position which will take years to regain.

Competition in this market is not new, but great growth in one of these competitive fuels—LP Gas—has taken place while the electrical industry was totally at war, and hence, not doing its accustomed selling job. *Domestic* use of LP Gas almost doubled from 1942 to 1945 while we laid off selling electrical appliances. During this time LP Gas producers spent 21 million dollars more than the electrical industry in advertising their product. This competition has already determined the time for action —it is no longer a matter of choice with us.

I mentioned earlier that the electrical manufacturers began back before the war was over, *long before they had any appliances to supply the demand,* to help revive the acceptance for the electrical idea in American homes. In 1944—16½ million dollars was spent nationally and locally on electric appliances and 20 million in 1945. The survey referred to earlier gives the answer to why people fail to use electric ranges and water heaters and other electrical services to the full in all electric areas; namely, they *have not heard* and *do not know* the truth about electrical appliances and electrical uses. We have not been telling our story while competition, offering a service admittedly superior to coal, wood, or kerosene, has been aggressively at work *selling.*

Even so, if we quickly resume our accustomed virile selling we can retain this market. Our LP Gas friends have not waited for an adequate supply of LP Gas ranges before promoting their product. In the last quarter of 1946 the rate of production of electric ranges was twice that of LP Gas ranges. Of the 38,000 users mentioned as having liquid petroleum gas, a moment ago, it isn't a case of locking the door after the horse is stolen, for the survey showed that 32 per cent contemplated the purchase of major electrical appliances, and of this group one-third intended to purchase a range or stove for cooking, and 33½ per cent a water heater. They were by no means determined to use these on their existing form of fuel. A good percentage were actively considering the purchase of electrical appliances to do these jobs. They must have finally read their contracts. The promotion and advertising of our industry has been designed to create an attitude favorable to ever increasing electrical usage. And since our market is a parade, not a static group — without constant promotion, part of the parade passes out of reach. How quickly and how well the electric story can be told will determine who gets these sales.

### Electricity for Farm Production

The latest estimate of the Bureau of Agricultural Economics forecasts a drop of 20 to 25 per cent in farm prices later this year.

Farmers must produce at lower costs to offset the effects of this inevitable drop in farm prices. We are all convinced that the way to achieve these lower costs is by the use of electricity. And the way to get the even lower costs for the farmer is for him to use electricity fully in the home, for then he reaches the lower steps of the rate which he can't reach if he doesn't cook and heat water electrically, and which increasingly improve his cost of operation. And he'll step up output at this lower cost! On one New Jersey farm 23 cows produced 24 per cent more milk and substantially increased the butterfat content after installation of electrically pumped running water. On another farm 28 per cent more milk and 35 per cent more butterfat was produced. They are watering the milk before milking nowadays.

To delay to tell these facts to farmers and homemakers alike, simply because of a temporary shortage of merchandise is to allow many more customers to become convinced that some other form of cooking and water heating is more economical and better.

### When Is 'Enough'?

And besides — when do you think there will be enough electric appliances? Mike Sweeney says, "The difference between not enough and too many is 'two'! If you have one too few, you haven't enough, and if you have one too many, you have more than enough." Who, therefore, is in a position to tell, on any product, when the time of "enough" arrives. If the past is any criterion, there is likely to be too much before we realize it and promotion now to assure market absorption at the time is essential.

If now is not the time to tell this story, then electrical manufacturers, particularly in the appliance industry, are unusually stupid and unenlightened individuals. In every magazine you see appliance advertising, particularly major appliance advertising, telling the story of electricity to customers everywhere, in spite of the fact that the supply of these products is as yet inadequate. People have waited these many years for the newer appliances. We must maintain their active desire for electric appliances and point out that their procurement is certain within a reasonable time. This is the true situation and we should not allow these families to go by default to competition and lose for a considerable time the joys of electrical living.

But you say our margin of electrical capacity is too small for us to add these heavy energy using devices to the lines. May I point out that new generating capacity plans for 1947 amount to about 3 million kilowatts and in 1948—4½ million kilowatts, and while this is being installed month by month, the electrical appliance industry finds itself unable, because of shortages of raw material, to produce at capacity. And as for copper and transformers, these items should certainly become available faster than the generating equipment. This same material shortage faces all industry, so that the industrial load at least for the balance of this year is likely to level off and remain somewhat static. In fact, a decline of 5 to 10 per cent in overall industrial production is forecast. In 1946 a good many thousand kilowatts of capacity were retired by the newer

and more efficient equipment added. But, much of this capacity is still available to take peaks until more machines can be built and installed.

This increase in capacity in 1947 will operate more than 30 million additional refrigerators, enough to supply every domestic customer with a new refrigerator. It will operate 4½ million new electric ranges or enough to double the present number in use. It will provide enough capacity for lights, washers, ironers, toasters, radios, and a hundred other appliances in 15 million new homes.

The appliance industry under present conditions of supply is unable to produce major appliances in anything like these quantities. The capacity to serve will surely grow at many times the rate of the demand created by the sale of ranges, refrigerators, water heaters, etc. Your engineers have been so in the habit of operating with a 30 per cent margin of capacity that a 10 to 12 per cent margin frightens them into suggesting a halt in selling. Selling must not stop. Here and there conditions of tight energy supply will undoubtedly exist to be assisted by the magnificent system of interconnections. But remember, more heating load, which is the point of immediate attack, can be served from a given installed capacity than motor load and the diversity which integrates a range at the power plant at 600 to 700 watts and the water heater at 50 to 100 watts, further enlarges the sales opportunity in these electrical consumer goods.

The other day I saw a sign in a store window—"Yesterday is gone! tomorrow may never come; if you have anything to do, do it today!" Opportunities multiply as they are seized; they die when neglected. Life is a long procession of opportunities. Opportunity is opening to us every day to improve the lot of homes and farms in the cities and in the far reaches of the country—and as we seize that opportunity we open the door of electrical opportunity to better homes, more labor-free and profitable farms, and to a safer, cleaner, less burdensome life.

During the war the "production genius" and "engineering miracle worker" had their day—without them the war could not have been won. But 1947 sees the salesman moving again into the front lines. He is not only to revive those who are still morbidly depressed by the last few years, he is to go further and bring many who have never enjoyed it, into the rich stream of electrical living. He has the nation with the widest market, the most money, the greatest eagerness to improve itself, and yet a nation in which selling has all but died. We must stop confusing buying with selling—purchases made on the initiative of the buyer are not sales.

Selling is the real motive power behind our modern industrial machine. Money or materials may start a business but only selling and salesmen can keep it running.

A plan of action to give direction to our selling is essential to mobilize the power of this great industry toward electrifying every home and farm no matter how humble.

Some of you have heard me quote from John Ruskin, "In order that a single blade of grass may grow, all the forces of nature must cooperate." For this cooperative harvest the "Go All Electric" program provides the "seed," the thousands of homes in the market constitute the good and fruitful earth, and we are the cultivators to make an electrical America grow. And if we face the sun together, the shadows fall behind us and we cannot fail.

## The Heat Pump as a Load Builder

(*Continued from page* 118)

terest be confined to the utility's Sales Department—it will affect all branches of utility operation. There is a definite challenge to the ingenuity and imagination of the utility's engineering and construction departments to meet such new problems in transmission and distribution as may be created by rapid load increases through the sale of heat pumps and other major appliances. This challenge should attract young engineers who may now be under the impression that there are no frontiers in the field of 60 cycle service.

You may consider that interest in the development of the heat pump now is premature, when most utilities have all the load they can comfortably handle until new equipment is available, but we believe "it is later than you think" and there are a number of reasons why the utilities should accelerate their interest in the development of the heat pump:

*First,* it is probable that capacity will be available by the time there is any appreciable load growth from heat pumps.

*Second,* there are many details related to design, construction and application to be perfected before the heat pump is ready for marketing in all localities. This will take time but, meanwhile, there are thousands of simple applications, similar to the Webber house, from which much can be learned by both manufacturer and utility.

*Third,* the public is eager for this service, particularly the new home builder, and it is in this market that we will probably get our biggest volume of heat-pump business. Many new homes are in the planning stage now, and that is the time the builder decides on his heating equipment. Every new home equipped with some other type of heating equipment can be taken off our heat-pump prospect list for several years to come.

*Fourth,* in these times, when the manufacturer is all but buried with unfilled orders, we can hardly expect him to pay a great deal of attention to a new appliance unless he is pushed by the utility to do so.

Much credit is due Mr. Philip Sporn and his associates for the leadership and pioneering work they have given to the development of the heat pump. It has undoubtedly stimulated a good deal of independent research by various utilities, all of which should be materially helpful to the industry's new Heat Pump Coordinating Committee which we understand has been formed for the purpose of correlating and developing heat-pump research and development on a national level.

The heat pump is worthy of the best efforts of our industry—not only because of its potential new load and revenue, but because of its potential contribution to better living in the homes of thousands of our customers.

## Education is the Foundation for Lighting Sales

(*Continued from page* 108)

package of school teaching aids on light and sight developed with the help of leading educators. They provide the educational basis for the Industry Lighting Program. These materials were designed to tie in with the Industry Program and to be the basis for the use of sales and promotional materials being made available through Edison Electric Institute which, together with the Bureau materials, give us the best equipped tool kit we have ever had to move lighting forward.

Now, this word in closing: Because the need is the greatest, the Bureau's program is its biggest, and its materials will be its best. For Better Sight 30,000,000 homes need four times as much light, 258,000 schools need seven times as much light, 100,000 office buildings need five times as much light, and 200,000 industrial plants need four times as much light.

Better Light—Better Sight is the foundation for lighting sales, and education is the foundation of Better Light—Better Sight. Let's go to work together on lighting education.

# How To Train Your Men For Creative Selling In a Returning Buyer's Market

By R. C. Borden
*Sales Consultant, Newark, N. J.*

**A talk presented at the 13th Annual Sales Conference, EEI, Chicago, Ill., on April 1.**

A BUYER'S market has a nasty way of sneaking up on you with a surprise element that can be particularly disconcerting after a false alarm.

I presume that in the electric power industry, just as in most others, you had what amounted to a false alarm. Probably, soon after V-J Day, you met in solemn conclave and heard voices of alarm predict that a buyer's market for power companies was just around the corner (Maybe only a year away) —so hurry! hurry! hurry! Recruit and train your sales departments fast against the imminent day when kilowatts would be in surplus supply and you would have to strain every sinew shoving them into use against the resistance of fierce competition and buying apathy.

Now actually, of course, as you look around at the scene today, you find kilowatts continuing in short supply, and promising to do so for some time to come.

So, at this point, it's only natural that you should be tempted to relax in your programs of sales manpower recruitment and training, preparatory for days of hard selling ahead.

*I urge that you resist that temptation!*

I urge, in fact, that you do the opposite of relaxing and that, instead, you scrutinize today more carefully than ever before the exact status of your present provisions for recruiting and training salesmen.

Come the inevitable day when you *do* need sales effort—you will need it *bad*—and you will want it *good!*

As you re-examine the status of your present provisions for sales training, I suggest you do so in the light of six key recommendations.

### Remind Yourself Afresh Why You Need a Sales Training Program

True, you already know why you need one, but often it's worthwhile reminding yourself of what you know.

The importance of a good sales training program today in practically every industry is heightened by wartime disuse of the mental muscles which our new business departments used in days when they had to go after business aggressively and creatively. Those muscles are now flabby and weak.

During the war period our salesmen, if we retained them as such at all, degenerated into errand boys and so-called business ambassadors, acquiring in the process the viewpoint that they were doing a customer a favor when they let him have something. So true is that statement that, before the war ended, articles were beginning to appear in many trade publications on "How to Make a Buy" instead of "How to Make a Sale."

For instance, let me read you a brief excerpt from one such article that I clipped recently from a trade paper published in the interests of retail store management. This article bears the title

"HOW TO MAKE A BUY"

"When a salesman calls at your store, don't rush him. First inquire about his health and the affairs of his family. Then discuss his hobby for a few moments. When you have him in a mellow mood, mention tactfully that you're down to one-twelfth dozen of his product. Work on his sympathy. Tell him you're trying to keep the store open for your son Ed when he comes back from the war. Ed wouldn't have the store as a gift, but the salesman doesn't know that. So warm up to this subject. Call on his patriotism. As you do so, watch his eye—the good one.

"If you see that your story impresses him, move in for the kill. Pull out Ed's picture and say 'That's the lad both of us are working for. Let me have a little merchandise for his sake!'

"Don't give him time to say no. Close the buy quickly by getting hold of his order form and putting your name on it while he is still but-butting in protest."

Well, even if you allow for the obvious wisecracking in that article, it still contains a generous core of truth—enough truth to underscore the soundness of this first recommendation: "Remind yourself afresh why you need a sales training program!" You need it basically in order to make soft selling muscle hard!

### Make Sure That Those You Train Are *Worth* Training!

How? You know how!

By really applying the vastly improved procedures that now exist, for selecting successful salesmen with precision—the kind of precision that screens out probable failures at selling work *before* you attach them to your payroll.

Once upon a time, in the good old days, you could go about building up a hard-hitting sales force by the leisurely method of trial and error, hire and fire, "throw enough manpower mud at the wall and some of it is bound to stick." To heck with all this new-fangled detail of scientific salesman selection!

That *used* to be a feasible policy. *But not today!* With the spread of unionization into white-collar fields, job-tenure security clauses are now being extended, more and more, to include salesmen. It therefore follows that to the same extent *firing* salesmen becomes more DIFFICULT, *hiring* salesmen must become more PRECISE.

If you have any doubts on that score, then listen to the following extract from a standard union contract that during 1946 was extended to cover many thousands of salesmen:

"Under this union contract the employer agrees that he shall not discharge any salesman unless authorized so to do by outcome of the following procedure:

"First: In the event the employer wishes to discharge a salesman, he must fully state his reasons in writing and give one copy of this statement to the salesman, another to the union, at least *six weeks* prior to the proposed date of discharge.

"Second: In the event that employer and union within the specified six weeks shall not agree in writing that justifiable cause for discharge exists, then the proposed dismissal shall be submitted to arbitration.

"One arbitrator shall be selected by the union, one by the employer, and the two

arbitrators so arrived at shall jointly agree upon a third. If they fail so to agree, then application for appointment of a third impartial arbitrator shall be made to the Supreme Court of the State."

WOW! That kind of salesman's union contract probably hasn't hit any of you . . . YET. But it's certainly something to bear in mind the next time you're tempted to hire a new sales representative carelessly, on hunch, because of the good "general impression" he made on you during old-style, hit-or-miss hiring conversation.

Never forget that under uncontrolled conditions of casual conversation, very often *the worst performer puts on the best interview*. Anyway, why shouldn't he? He's the guy who gets fired oftenest and consequently has the most practice interviewing new employers.

So, why not resolve right now that in the case of your selling organization you will protect yourself against the ingenuity of slick phonies who would like to slip into your employ. When you get back to your office, check into the exact status of your present salesman hiring procedure. Has it been modernized to include the many new techniques for picking winners more surely—screening out incompetents more accurately?

Make sure the answer to that question is yes. Make sure that the salesmen you train are worth training!

### Get Set Now With *Packaged Training* to Meet All Objectives!

Your objectives, of course, will include:

Break-in training for new salesmen.
Refresher training for old salesmen and returning veterans.
Continuation training for *all* salesmen—new *and* old.

I understand that you are fortunate in already having in your possession a basic packaged training course prepared under the sponsorship of your association, and that other specialized packages are planned. The complete package idea in training is vitally important because without it you just don't accomplish training objectives.

The most effective training packages, by the way, include more than just a kit of slide films or some booklets with a ribbon tied around them. They represent a careful integration of all such teaching materials, and others, into a complete training agenda—an agenda that specifies to the last detail what you're going to do with a new salesman from the time he is hired until the time you turn him loose on your customers.

On an hour-by-hour basis, what will he receive each training day in the way of talks, demonstrations, viewing of films, personalized coaching, study of assigned reading material, quizzes? *Where* will this training take place—and under whose direction?

A good training package should not only work out answers to all such questions, but should get those answers down in black and white as part of recorded procedure—procedure that can be used over and over again without a new brainstorm each time.

### Acquire Modern Visual Tools of the Training Trade

I'm sure you are all familiar with some of these modern tools of visual training. You all know, for instance, about sound slide film machines and motion picture projectors. But perhaps some other useful items of visual equipment may be relatively new to you. Let me quickly mention just a couple of them:

Are you all familiar, for instance, with the overhead slide projector? This device operates well in an almost fully lighted room and yields the instructor of a training group several worthwhile advantages:

1: He can be his own projectionist as he talks, since all he need do is lay his slides, as if they were notes, on a lighted platform in front of him. Thus, he doesn't have to rely on click signals to a guy named Joe in the rear of the room—a chap who usually has a genius for flashing on either the wrong slide or the right slide upside down.

2: He can animate each slide he shows by projecting his pencil tip onto the screen along with the picture—all this time facing the audience as he talks instead of turning his back to point to a screen.

3: By using a blank slide instead of one with a picture already on it, he can turn his screen into a projection blackboard. Thus, if an instructor were lecturing a group on, let's say, electronics, he might parallel a drawing with words as follows: "The electronic tube, gentlemen, contains three basic elements — a cathode emitting electrons, an anode receiving electrons, and a grid controlling electron flow. Potentials are as shown. Electron flow is in this direction."

Well, that's just one of the many relatively new visual training tools born of the war.

Another is the modern high-power opaque projector which flashes big, full-color pictures onto a screen without the need of slides at all. Thus, if you want to project a catalog page to a group of trainees, just tear out the page in question, stick it in your opaque projector, and wham! there it is in full color on the screen, enlarged to fifty times natural size.

Now, true enough, technical details like those I've just covered may seem inappropriate subject matter for a talk to a broad, executive group like this one. It's my hope, however, that those details may stimulate you to re-examine your own visual equipment for training. As you do so, remember this.

When you lean heavily on appeal to the eye in a training program, you win three important benefits:

1. You gain increased clarity. 2. You command keener interest. 3. You accomplish a given training result in less time.

Those advantages are worth obtaining and because they are, it will pay you to acquire, as part of your sales training set-up, some of the modern visual tools of the training trade.

### Remember That the Best Training Tool of All Is Drill

A drill, by definition, is any period in a training session where teacher stops talking and pupil starts performing. It's that portion of the training period which transforms academic knowledge of what *should* be done into practical skill in the art of *doing* it.

For instance, let's assume that right now *I* am a trainee, recently recruited into the sales organization of a Power Company. The training session we're going to use happens to deal with home appliances rather than industrial power selling, but the principle involved is the same.

For the past 15 minutes, we'll assume, the teacher has been lecturing to me, along with some fellow-recruits hired at the same time I was, on the importance of making only accurate claims about a product. The burden of his lecture has been: "Gentlemen, when you make a sales talk about one of our products, fill

your talk with enthusiasm but *not* with lies. Don't misrepresent. An understatement overproved always does more good than an overstatement underproved."

And now, having finished his theoretic development of that point, a good sales trainer would proceed from lecture to drill:

TEACHER—All right, now that you folks in this training group understand why enthusiasm should never outrun truth, let's have a little drill.

Suppose we begin with you, Borden. Here's the idea. Make believe the rest of the fellows out there are customers. On that assumption give 'em a sales talk about this electric washing machine, a talk that's brimful of enthusiasm but free of exaggeration. Everytime you let an exaggerated statement slip out, I'll let you know you're off the beam by this signal (Razzberry sound effect). See how few of those you can get.

BORDEN: All right, I'll see what I can do.

Folks, this electric washing machine of ours is sure a honey, it'll wash anything—an innerspring mattress, a fur coat, a high silk hat (warning signal). Well, maybe there are a few other pretty good machines, but this one is outstanding. For one thing, it's so sturdily built that you could throw it off the top of the Edgewater Beach Hotel and not hurt it (warning signal). Oh, maybe it would dent a little when it landed. But it *is* sturdily made, and fool-proof too. Why, there's absolutely nothing about it that can ever get out of order (warning signal). Of course, you *do* have to keep oiled the 23 places that we tell you about in the instruction manual, and tighten up from time to time the 15 screws that we show you in the diagram, and at regular intervals you have to give it a complete overhaul, but otherwise it needs little attention, which is more than I can say about other washing machines that in a few weeks usually either blow up or explode!

At this point, let's "tune out" the training session for the purpose of making this observation:

If you introduce drill periods into your sales training program, try to make each drill interesting. Try to make it fun. Now, of course, it goes without saying that the purpose of training is to teach—not to entertain. But it's just as plain as the vacant stare on a student's face that comprehension comes only with interest. Unless you succeed in putting the fun in fundamentals, what you say to your men in a training session is likely to register only as tiresome preaching—if it registers at all!

To punch home a little harder the fact that drills can be interesting, let's tune in again on that sales training session. As we tune in on him this time, he's just finished a lecture on the importance of a salesman always talking up Customer Benefits, rather than just "nuts and bolts." Once again, we find him ready to proceed from theory to drill:

TEACHER: There's no doubt about it, gentlemen. Everytime you work a customer benefit into your sales talk, you ring the bell (sound effect). Let's drill on that now—starting with you, Borden. See how many "bells" you can get in a quick sales talk about our electric home freezer.

BORDEN: Okay, I'll see what I can do.

Folks, this home freezer is a wonderful buy for several reasons: First, it has double wall construction with intervening insulation made of highest grade rock wool.

(Borden looks expectantly at teacher, but latter only shakes head sadly).

Well, because of that insulation, this freezer keeps out the heat better, so you, Mr. Customer, get the benefit of low refrigeration cost!

(Borden again looks expectantly at Teacher and this time he gets approving head nod and loud ring of bell).

Reason No. 2 why this home freezer is a good buy. It has an exterior finish made of thermo-setting plastic that's baked on electronically.

(Again looks expectantly at Teacher, but once more gets only sad head shake).

Well, because of that electronically baked thermo-setting plastic the exterior of this freezer won't crack or chip, so you, Mr. Customer, get the benefit of a piece of equipment that *stays* good looking.

(Borden again looks expectantly at Teacher and this time gets confirming nod of head plus loud bell ring).

Reason No. 3 why this freezer is a good buy—it has patented casters that roll with a hypo-cycloidal motion in a stator molded to form an internal double helix.

(Looks expectant, but received only negative head shake).

Hmm! Let me see. Oh, yes, because of those hypo-cycloidal casters, this freezer rolls easily, so you, Mr. Customer, get the benefit of this when you have to change the location of your freezer.

As a matter of fact, Mr. Customer, this freezer rolls so easily that it actually rolls itself!

(Teacher makes hasty grab for razzberry device and gives warning signal previously used in anti-exaggeration drill).

Well, you get the idea. Drills can be fun as well as effective. Never forget that often the best training tool of all is drill.

And now we come to the last recommendation in this series.

#### Get Receipts for the Training You Give

The best kind of receipt is not a 100 per cent grade on a quiz paper.

Instead, it's tangible improvement in the selling performance of a trainee as measured by how he does in demonstration talks during drill work, or better yet, as measured by his actual performance in the presence of a customer under the observing eyes of a field coach.

A good training program should not be content with continuing mediocrity on the part of those receiving instruction. It should insist on improved trainee performance keeping pace with the advancing hands of the training clock.

It should employ, in principle, the flashmeter technique applied to the training of anti-aircraft gunners during the war. The word "flashmeter" may be unfamiliar to some of you, so let me explain. During the early days of World War II, our anti-aircraft gunners were shooting down more friendly planes than enemy planes because they couldn't tell 'em apart. So, an intensive training program was begun in aircraft recognition. This program made use of an instrument called the flashmeter, which, attached to a projection device, permitted the trainer to show on the screen the silhouette of an airplane and to hold it there for a controllable period of time. This period was made shorter and shorter as training progressed.

To emphasize the point involved here, I would like to sign up all of you for a short course in aircraft recognition. I am going to start you with a rather simple problem—distinguishing between a Flying Fortress, a Stuka dive-bomber, a P-38, and a Messerschmitt. The first slide I will show will be a Flying Fortress. Note the distinguishing earmarks. Four engines, high ver-

tical stabilizing fin, wings making an almost straight line.

The next plane I will show on the screen is a fast enemy plane which did a lot of damage to us during World War II, particularly on the eastern front—the Stuka dive-bomber. As you look, notice first the non-retractable landing gear. Notice also that it has one engine instead of four, as in the case of the Flying Fortress. Note that the line of the wings is broken rather than straight, with two breaks. Note, also, the air scoop, right under the fuselage.

The next plane I will show is also an enemy plane, a fast fighter, very damaging to us on both fronts—the Messerschmitt. You can distinguish this from the Flying Fortress by the fact that it has only one engine. You can distinguish it from the Stuka dive-bomber by the fact that it has a retractable landing gear. Notice, also, the prominent "V" made by the struts, with the horizontal stabilizing surface.

The last plane I am going to show is one of our own, which the enemy learned to dread on all fronts and in all theaters—the P-38. The key mark of this plane is its two engines. Note, also, the twin vertical stabilizing rudders, characteristic of the split fuselage construction of this plane.

The lecture part of this training program is now over, so we next come to what should be the most important part of any training program—the drill part. I am going to ask our operator to shuffle those four slides and pick some one of them. No one knows what he will show, not even me. We shall start with the flash-meter speed of only 1/5 of a second. For just 1/5 of a second you will see one of those four planes on the screen. The minute you identify it, call out your recognition of it. A Flying Fortress! Right.

Now we are going to do what a good training program should do—step up our expected levels of performance. This time our flash-meter speed will be set for 1/25 of a second. I am increasing the speed five times. Call out your identification again. P-38! Right.

You are so good, I am going to ask our operator to set the meter now for 1/50 of a second. We are now getting into split second timing, but life or death hangs often on just that. So, get set. You are right. It is a Stuka!

This time, Mr. Operator, I am going to ask you to choose a special slide which will expose three airplanes simultaneously. Two of them are friendly and one is an enemy. You are going to have just 1/100 second to tell me which one you are going to shoot down. We don't want to shoot down a friend; we don't want the enemy to get too close to us. So, call "top," "middle," or "bottom." Quite a few of you gave the right answer. The plane on the bottom was a Messerschmitt.

Before those of you who got the answers right, begin patting yourselves on the back, may I remind you that you don't even begin to get good in this kind of training until you can recognize five planes exposed simultaneously in 1/250 second!

What is the moral of all this? It is this: In the field of sales training, precisely as in the field of military training, we, too, should place our chief reliance not upon lecture work but upon drill under the supervision of a trainer who insists, like the flash-meter does, upon progressively higher levels of performance. Only then will we truly get receipts for the training we give.

And now, let's summarize. To check on the adequacy of your present sales training provisions, re-examine them in the light of six recommendations:

Get receipts for the training you give.

Remember that the best training tool of all is *drill*.

Acquire modern visual tools of the training trade.

Get set now with packaged training to meet all objectives.

Make sure that those you train are worth training.

Remind yourself why you need a sales training program. Why? To make sure that when the inevitable day of a buyer's market does dawn, the muscles of your selling organization will then be, not soft, but HARD.

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# Commercial Market Emphasized in EEI Committee Report

THE scope and potentialities of the commercial market, and the importance of the commercial load to the electric utility, are described in a report of the Market Development Committee, Commercial Division, Edison Electric Institute, which has just been published by the Institute. Entitled "Analysis and Development of the Commercial Market," the report briefly outlines the applications of electric service in commercial establishments, and presents a recommended plan for successful selective selling in this field.

The stability of the commercial load: its relatively high usage per customer; the high gross revenues produced, and the compensatory rates employed, are the principal reasons why the power company should intensively promote its services to commercial customers, the report states. The large market awaiting development is indicated by surveys which reveal a tremendous backlog of new equipment needed to rehabilitate existing installations, and the large amount of commercial construction now in the planning stage in nearly every city.

Drug stores alone propose to spend nearly 70 million dollars for modernization, according to an *American Druggist* survey, the report states. Yet the average store plans spending only $185, or 3.1 per cent of its total expenditure, for interior lighting, a factor which stresses the need for intensive selling if the power company is to receive its share of this profitable business.

A well-organized sales plan is required, if the electric company is to meet the keen competition expected in the commercial market, the report continues. Adequate sales budgets, well trained manpower, proper sales promotion aids, effective advertising and efficient coordination of all sales allies are all essential, it is stated.

Describing the various applications of electric service in the commercial market, the report emphasizes the importance of the lighting load. Connected lighting load in this field represents only one-third to one-half the potential, according to the report. Accent lighting, if properly promoted, can amount to 60 per cent of the general interior lighting load in many cases, the report says.

The report concludes with a suggested plan for organization of the utility sales department, and recommended activities for successful selling in this field.

"Analysis and Development of the Commercial Market" is available from the Edison Electric Institute, 420 Lexington Avenue, New York 17, N. Y., at 50 cents per copy to member companies, $1.00 to non-members.

# The Farm Market and How To Use It

**By Paul E. Miller**

*Director Agricultural Extension, University of Minnesota*

A speech delivered before the Commercial Sales Conference of the EEI at Chicago, Ill., on April 2, 1947

THE SUBJECT assigned to me by your President is one that could be more ably discussed by someone closely identified with the electrical industry. As you know, educational people do not have much of a reputation for business sagacity and their ideas seldom result in much financial gain to themselves.

I offer this statement not as an apology but to emphasize that my approach to the subject may not seem quite orthodox to you.

I would dwell briefly on what the Bureau of Agricultural Economics has called "The Revolution in Farming." Between 1900 and 1939 the output per agricultural worker nearly doubled. Then between 1939 and 1946 the output per man hour in agriculture again increased by nearly 40 per cent. A part of this latter increase may be attributed to favorable weather. Another considerable part is certainly due to improved techniques, general adoption of hybrid corn, improved varieties of grain and other crops, and increased use of fertilizer. The most important single factor in bringing the change, however, was the quick adoption by farmers from coast to coast of new and better ways of doing the farm job. There has been a tremendous advance in the mechanization of our farms and in the application of science to the job of farming.

### Farm Scientists Raise Production

Likewise, there has been a tremendous change in the attitude of farmers toward new ideas and new methods. Tradition, which has played so important a part in farming down through history, is losing its hold, and science, examining and testing the old and the new, is increasingly charting the course.

Production of American farms and output per man in agriculture are now on a high plane. Yet those close to agriculture mostly agree that the revolution above referred to has not yet run its course, but is a continuing revolution. What we now see is only a forerunner of things to come.

It may be in order also to background my remarks with a brief statement of the educational program and objectives of the Agricultural Extension Services, which are credited with being an important influence in bringing about this great revolution. Extension work has now been in existence for over a third of a century. It was conceived by a few forward-thinking men who saw the necessity of getting the results of the agricultural research being conducted by the U. S. Department of Agriculture and the State Experiment Stations out on the land where the problems were. Farmers more generally needed to put into practice the newer methods that had been proved sound and practical by experimental work.

Thus the county agent system came into being. A trained agriculturist in every agricultural county of the United States was the goal. His job was to work with farmers to improve their production practices. Today there are such workers in every county in the United States where agricultural production is of any significance. As the program has expanded, home demonstration agents have been added to work with rural homemakers and 4-H club agents to work with farm youth. It has grown to be the largest out-of-school voluntary educational program in the country. Its roots are in the soil, and its motivating force has been improving the lot of the individual by making him more efficient in the management of his business, and in so doing a more useful member of society.

How effective agricultural extension work has been is indicated by the widespread use of science and the results of research by farm people, by the great 4-H club movement and by the steady improvement of rural living conditions.

This program has not been handed down to farm people by a patronizing government. Rather, it has been a cooperative effort jointly supported by the federal government, the states, and the participating counties. The control is out in the country with farm people, and the work program is developed by their own planning committees. The end objective is, of course, to translate economic gains into improved rural living. Much progress has been made, and I hasten to add, many agencies have had a part in this development. But to the farm people themselves should go most of the credit.

So much for a little background of what we in Extension work are attempting to do. We want to work closely with all groups and agencies whose activities are with farm people, including public and private agencies, commercial or otherwise. By so doing we think the farmer will be better served. Very naturally we are interested in your industry because it holds so much promise in emancipating the farm home and the farm woman from the primitive conditions that have distinguished rural from urban life for so many years. Now, with the rapid electrification of our farms, the conveniences of the city are available to the country, and they are destined to fill a constantly increasing field of usefulness.

### Teach Farm Families Electric Time-Saving

In Extension work much of our effort in recent years has been to assist rural people to plan wisely for these improvements. Right now in Minnesota we are conducting a traveling caravan which we call the Labor Saving and Safety Show. The exhibits fill a town hall or armory, and to a large extent they show by means of models, plans, pictures, etc., the uses to which electricity can be put to work for the farmer and homemaker. This show has been on the road for over two months now with an average daily attendance of upwards of 2,000 people. We have never carried on an activity that has attracted similar interest on the part of the entire farm family.

A year ago our home extension specialists conducted educational work with 71,000 farm women in home remodeling, kitchen improvement and modernization. Our agricultural engineers conducted countless demonstrations of farm sewage disposal plants, pressure systems for water, barn drying of hay and some of the other newer adaptations of the use of electricity to farm work.

Why are farm people interested

in all of these things? Chiefly because they are labor saving devices and improve many production practices. When the field operations were mechanized following the advent of the modern tractor, the farmer was freed from many of the slow and laborious methods of the past. Production costs were lowered and crop yields were increased.

### Electricity the Chore Time-Saver

But mechanization of field work was only one part of the farming business. In the average corn belt state where livestock is the major business, and especially in the dairy states, more than one-half of the farmers' working hours during the year are spent doing chores and caring for the livestock. The coming of electric power has made possible the reduction in the time required for these tasks in dairy farming, in poultry production, and to a lesser extent with other classes of livestock. This is an important reason why the production per man is more than double that of a few years ago and fewer persons are needed to insure adequate production of food and fiber for the needs of our people. All of this should add up to a higher standard of living on the farm than has been possible in the past.

The more progressive farmers have begun to visualize the almost unlimited possibilities for using electricity to eliminate drudgery, shorten hours of labor, prevent losses of perishable commodities, improve quality of products to be marketed, and to increase overall farm operating efficiency. In general, however, farmers still have a long ways to go in understanding the opportunities in the new force which has been made available to them in electricity.

In applying electricity to rural areas, the needs and desires of farm people fall into two general classes. There are the uses of electricity that add to home comforts and those that assist in farm production. Farmers who can afford both will have them as soon as possible.

Home lighting is, of course, first on the list. Sanitary plumbing will have a high priority, now that water pressure systems are possible. Refrigeration and freezers are also much desired. These things will make for greater comfort, improved diets, better health for the family, and less drudgery for the rural homemaker.

Electric current promises to become the most efficient hired man the farmer has ever had. The dairy farmer of the future—and, in fact, for many the future is now here—will prepare the feeds, dry the hay, clean the barn, milk the cows and cool the milk, all with electric power, and with a minimum of hand labor. All of this labor saving equipment has a tremendous appeal to farmers in these days of labor scarcity, high wages and indifferent help.

It goes without saying that this vast market potential for electrical goods has not been overlooked by the manufacturer. Of this fact you are well aware. How rapidly farmers will respond to the lure of the salesman will depend upon several factors. The demand is substantial and increasing, and farmers do have resources with which to buy. They were never in better financial position, and they are thinking in terms of improved farm homes and more efficient farm operations rather than going into debt to buy more land.

This is quite the reverse of the situation following the first World War. I well recall a talk I made at that time to a state-wide meeting of salesmen who represented the building trade interested in the farm market. With farm prices falling rapidly, farmers deep in debt, and mortgages being foreclosed, I could not give an encouraging report on the ability of farmers to buy anything except the most meager essentials to their business. Today the picture is much brighter no matter what point-of-view we take.

But I would not want to leave the impression that farmers are going to buy with abandon. Bright as is the picture, it is by no means a sellers' market. No group of people are more price conscious than farmers when they can wait if necessary for more favorable conditions under which to make desirable improvements.

Farmers are utility conscious. They will want to know several things about the equipment they are interested in. They will want to know how much time will be saved when a new machine replaces a former method. They will want to know whether the new expenditure can be amortized in reduced costs and how long a period it will take. They will want to know how much the value of their farm product will be increased by its use, let us say, of a mechanical milk cooler. Last but not least, how durable is the equipment, how fool-proof is its operation under varying conditions and how well it is adapted to the job it is made for.

In other words, farmers want facts and not just sales talk. The industry must be prepared to talk in these terms if the farm market is to be intelligently served. This, I think, calls for some intensive work on the part of the manufacturer to test his product thoroughly before it is put on the market, and to have distributors equally well informed.

### Sell the Farmer What He Needs

In developing the farm market it is essential that the dealer who contacts the farmer know and understand the farmer's problems as well as knowing the characteristics of the equipment he sells.

Installations must be properly made, and the capacity of the machine must be right for the job on the particular farm.

Some time ago an advertising agency representative was in my office wanting to know who was most likely to sell the farmer his electrical equipment—whether local distributors would get the business or whether direct mail selling would be the important outlet. In addition to the points already made, I ventured the opinion that farmers would be interested in getting their electrical appliances and equipment from those sources that could furnish adequate maintenance and repair service. It seems to me this is of first importance, especially with electrical goods that cannot be serviced by the farmer himself. Distributors who can furnish intelligent, honest, and quick repair service at reasonable cost will have a special appeal to farmers who as a class fully appreciate the need for service in machine operation.

I have already mentioned the need for thoroughly testing electrical equipment under farm conditions before it is put on the market. There is equal need for the industry to engage in more research under practical farm conditions to determine new and profitable uses of electrical energy in doing the various farm tasks. It is true that the state colleges thru their agricultural engineering departments are working on these questions—but their resources are limited and they cannot do the job adequately. They can, however, cooperate with the industry in some of this work.

The electrification of the farms of the nation has come about so rapidly that as yet our imagination has not comprehended the profound changes that it will bring about. Like other advances in agricultural technology, these changes must

be preceded by research and testing. Because their field is so new and its potential so great, this phase of its development is of particular importance. These are of course some of the longer term aspects of the subject under discussion but they may be of more significance than some of the questions under immediate consideration.

A prominent engineer has summarized the need for information under these four points:

1. How electricity can best be fitted into individual farm operations—how maximum returns can be realized on the investment.
2. What kind, type, and size of equipment will best meet the requirements of each farm job.
3. How the equipment should be operated.
4. How the equipment should be maintained and serviced for fullest usefulness.

Of course, the trade is interested in how many refrigerators, coolers, fans, motors, etc., the farmer will buy in 1947, and in the years immediately ahead. As I have already mentioned, there are many indications that response will be favorable.

Also, there are some imponderables. Farmers have many unfilled wants, some of which are in the urgent class. His resources are at present good. On the other hand, the farmer is in the same position as most of us in that he has many needs—all of which must compete for his expendable dollars. Whether he will be able to spend generous amounts for the electrical appliances which he and his family want will depend both on continued high income and also on how much rising costs of other things will cut into that income.

Farm prices should hold at reasonably satisfactory levels during 1948, and probably thru 1949 because of the support to prices which the government is pledged to maintain during those years. Continued strong demand, thru 1948 at least, for export needs should also be a factor in supporting farm income. But it is generally accepted that the farm price curve is downward and that farm expenses will hold for some time at present levels. All of this means that the farmer's net income will be less than in recent years. This is of not too serious import if the decline does not go too far.

There is, however, a psychological factor of considerable importance. Farmers are sensitive, and rightfully so, to falling prices. They quickly adopt a conservative attitude in regard to expenditures other than for those needed to carry on their business. It is apparent and, of course, well understood that all industries looking to the farm market are equally concerned with farm people that farm prices be maintained at a level comparable with the wages and prices of non-farm groups. This level must be maintained if the farmer's dollar is to have an exchange value that will make him a good customer of industry. If the agricultural economy can be maintained at a satisfactory level during the years immediately ahead, we should have a healthy situation, and the farmer will make his full contribution to business turn-over.

Your contribution to the farm enterprise can take still another approach. Whether we have farm programs in the future or not, it must be assumed that as long as the free enterprise system prevails farming will be a competitive business. Those farmers who use the most efficient methods and exercise the best management will be the most successful. As the differential between costs and prices of farm products narrows, there will be a premium on efficiency. It can be expected that the intelligent use of electrical energy applied to farm operations will reduce costs, and actually make more urgent the installation of electrically-operated equipment, providing that equipment is well-chosen and productive.

Every hour of hand labor that can be eliminated thru the use of electrical power is a distinct saving, and especially so when production costs must be lowered. Many examples can be given, but the dairy industry is an outstanding case in point. Electric current has made possible the more general use of milking machines. Electrically - operated barn cleaners will soon be in general use. Two jobs that have required the extensive use of hand labor in the dairy business have thus been shortened.

Quality standards of milk production are becoming more exacting with each passing year. Without electricity the dairy farmer is badly handicapped. The old-fashioned methods of caring for milk utensils and of cooling milk will not meet present day standards of milk production. Electrically - operated milk house equipment is essential if the job is to be done economically and meet required sanitary standards.

It is hardly necessary to cite other examples although there are many of them. We in the educational field are interested in these developments because they should make for more efficient farm management, lower operating costs, and in the end, vastly more pleasant farm living. I, for one, believe farmers on good farms are going to have these things. When the automobile first appeared, we thought of it as a luxury that farmers could never afford. Now it is a necessity that could not be given up. The same was true of the tractor. Yet it has led the way towards complete mechanization of crop production, and profoundly changed our farm economy.

The same will be true of electricity. It will not be a question of being able to afford it, but rather of not being able to live without it. It promises to be the last step in wiping out those primitive conditions that have so long been associated with rural living and make possible a modern home on the farm, and modern farm living. Once we have these things, farmers will never give them up any more than they would give up the tractor or the automobile. They will be a permanent part of rural life and set a new standard of living in rural America. And farmers, who by their very occupation are required to work longer hours than those in any other occupation —at least longer than the 40-hour week —are entitled to these comforts and conveniences. They have too long been denied them.

And upon you, who represent the electrical goods industry, there will unfold a vast new market of upwards of 6,000,000 farms and farm homes. It is your responsibility to furnish the kind of equipment that farm people need, at a price that farmers can afford to pay. Farmers believe in the philosophy of abundance. The American people have never been denied abundant food at reasonable prices, except in times of national emergency. If the free enterprise system is to endure, to lead the nations of the world to higher standards of living and enlightenment, industry and labor must subscribe to this policy of abundance. In that policy rests our security. Farmers will do their full share to make it succeed. With all groups participating we should be on the threshold of a new era in which all people can share in the blessings that the scientific and creative genius of our people has made possible.

# Agricultural Workers' Part in Farm Electrification - I

By Ide P. Trotter

*Director, Texas Agricultural Extension Service, College Station, Texas*

A talk presented before the Farm Section of the EEI at the Annual Sales Conference, Chicago, Ill., April 1, 1947

IT seems to me quite appropriate that a group of agricultural Extension workers should discuss our problems and programs with representatives of the electric industry because, historically, both of our organizations are outstanding products of research. Thomas A. Edison's invention of a practical electric light bulb and the d-c generator, made it possible to harness electricity to the service of people. That research taught how to control the electricity which Benjamin Franklin and his kite proved was all around us, and channel it into avenues of service to people.

By contrast, I imagine that few in this audience know that a comparable example of research led to the development of agricultural Extension. Soon after the turn of the century, Dr. Seaman A. Knapp sought to tap the supply of information available at the research centers, such as the agricultural experiment stations, and elsewhere, and make it of use to the practical farmer and his family. Necessarily his medium was a local Extension agent, working in a limited community, who took the accumulated scientific knowledge and information to the farmer, his wife and children, and interpreted it through the local demonstration. The experiment stations had been finding out useful things for more than 25 years, so it remained for some one to develop a means of efficiently putting this information into the hands of the farm people who alone could put it to work. This was it!

This local agent has multiplied through the years into the county agricultural agent, the county home demonstration agent, the 4-H Club agent and various kinds of assistant agents, each of whom stands today as a vital link between the research scientist and the practical utilization of his advancing knowledge. With one hand these agents clasp the torch of knowledge furnished by the research worker and with the other clasp the hand of the farmer and his family. Literally through their bodies, their minds and their souls, they transmit to farm people day by day, by every known means, the latest and best scientific information.

To be sure, in your industry and in mine, the 1947 machinery for accomplishing these purposes is quite different and much more complex than that which Thomas A. Edison and Seaman A. Knapp dealt with. But the basic purpose and justification for their existence and the basic objectives of their work are still the same.

### Development of Scientific Farming

It is proper for us to be together today because we are partners in working for the preservation and development of the maximum resources of our rural areas for the economic and social well being of all the people. We are beginning to realize that continued difficulty lies ahead unless this is successfully accomplished throughout the United States and the world. Accordingly, it is apparent that the fundamental basis for real rural progress lies in the soundest, most rapid and most economical adjustment of agriculture to the changing scientific and economic conditions of succeeding years. It is obviously our mutual responsibility and purpose to do everything within our power to make it possible for all of our people, both rural and urban, to profit by such scientific advantages as are to be had from any source. Electricity is one. By properly using all of these advantages, including electricity, we are strengthening the foundations of our local communities, our counties, our state and our nation.

I wish it were possible to give you a detailed history of the development of the Land-Grant College System in the United States. It is regarded by many as one of the great modern inventions for finding facts, teaching facts, and putting facts to work in a free democracy. The Agricultural Experiment Stations are charged with finding the facts; the Land-Grant Colleges in the various states are maintained for young men and women to study these facts; and, finally, the Agricultural Extension Systems throughout the United States are designed to take these facts to the farmer on his farm and make science his servant that *he* may live better and *we* may be better fed and clothed. From the inception of Extension work in 1903, the idea and the program has grown steadily through the years. Each national emergency, and particularly the emergencies caused by wars, have called on this type of an organization and the farmers with whom we work for superhuman efforts. Both have been fully equal to these occasions just as your industry has met both peacetime and wartime demands for your services.

We have, then, in 1947 from one to ten or more such county Extension agents in practically all of the 3,075 counties in the United States. These people are cooperative employees of a county organization, usually the regular county governmental body but sometimes a farm organization group within the county, the state government through their land-grant college, and the Congress of the United States through the Department of Agriculture. Thus, we are by law, by title and nature cooperative employees. Is it any wonder then that all Extension workers, and particularly for our discussion today, the county Extension workers are expected to cooperate with all groups in the county who are willing and ready to work toward the development of a sound and satisfying agricultural program?

The peculiar function of the county Extension office is to furnish a direct contact between farm people and all of the facts and findings of the various sciences applicable to their agricultural problems. The purpose is to help farm people use their time and resources to better advantage, thereby supporting themselves, their community, their county and their state and nation most effectively. These Extension workers should have a background and basic training in agriculture and home economics fitting them for work with farm people. They also must possess a personality which permits them to be both intimate and ef-

fective in their contacts with both the farm people and the people of the towns and cities.

We in the Extension service are aware of the tremendous advances in the electric industry and study it day by day. We are also aware of the many new things now coming out or just about to come out which will further change and advance the usefulness of electricity in farm operation. I wonder whether we are also fully aware that this is just a part of a tremendous, dramatic and potentially valuable change now taking place in agriculture.

### Electricity Comes to the Farm

I dare say that many in this audience were raised on a farm. Probably most of them were small farms. May I therefore suggest that we go back in our memory for a few moments for a bit of background on our present agricultural situation. Some of the older among you who were raised on a farm may remember a day when your mother gave you a lunch pail or water jug and told you to take it out to your father who was making hay on the back forty. You may remember, too, how you found your father and his haying crew—wet with sweat and pretty tired from the slow and back-breaking work. There was the mower, and the boy on the windrow rake working on yesterday's cutting, and the buck rake slowly moving the hay toward the press. There was the team of old horses going 'round and 'round stepping high each time they went over the frame and plunger rod of that old horse-power hay press. There were two men feeding the press, and your father putting in the blocks and tying the baling wire as the boy who was "bucking up" for him fed the ends through the blocks. There were two men stacking the bales on the wagon. . . . Imagine now, if you will, that you left the house on this mission under the conditions under which you grew up, twenty or thirty years ago . . . and as you turned the corner around the patch of woods toward the field where your father was working, you found the scene suddenly changed to a haymaking field of today. You probably would find your dad spinning across the field on a *one*-man pickup baler, spitting out bales of hay faster than you ever dreamed even a *large* crew could. You well know, that had you as a youngster suddenly stumbled on such a scene . . . you would have headed for the tall timber fast and would probably have had to be rescued from the tallest tree or deepest hole you could find.

This illustration simply means that agriculture has advanced in technology and science just as the electric industry has. These advances will continue. Electricity is helping and can help more if we all work together and work for the farmer's interest. By so doing we will accomplish our purpose, for only a prosperous farmer can regularly use enough electricity to make rural lines profitable.

Now let us discuss for a few moments the progress which has been made in farm electrification and some of the problems and possibilities which lie ahead. In recent years, tremendous progress has been made in taking electric service into rural areas and into farm and ranch homes. Latest available figures indicate that approximately 3,350,000 farms in the United States now have central station electric service. This represents, roughly, 60 per cent of the "occupied" farms in the country. More than 4,000,000 or approximately 75 per cent, of the "occupied" farms either have central station service or are located within one-quarter mile of a low-voltage distribution line.

Plans already announced by the electric industry and the Rural Electrification Administration give assurance that more than 85 to 90 per cent of all farms in the United States will have central station electric service within the next five to eight years, or as rapidly as labor and materials become available.

The real success of the farm electrification program will depend upon the total value of the electric service to the farm family when measured in terms of increased efficiency, greater income and a more satisfying life.

### 250 Electric Farm Uses

Through research and field experience of the electric industry, state experiment stations, various governmental agencies, and farmers themselves at least 250 practical uses for electricity on the farm and in the home have been developed. Hundreds of other uses will undoubtedly be developed. The possibilities for the profitable use of electricity on the farm and in the farm home have hardly been scratched.

A few of the more progressive farmers have begun to visualize the almost unlimited possibilities for using electricity. In general, however, farmers have only a very rudimentary conception of the opportunities inherent in this new force which has been made available to them. In order to bring this home to farmers they must become more conscious of the significance of a statement I saw recently that the average worker in cotton production had at his disposal machinery and equipment valued at only $500 while the average worker in industry had at his disposal production tools and equipment valued at $9,000. If the farmer can efficiently use more power and more power tools in his farm and home operations he thereby increases his output per worker and the income from his work.

### Basic Farm Service Needs

If farm people are to realize the maximum benefits from electric service they must have:

(1) Dependable information which will enable them to know how electricity can best be fitted into their individual operation and how to realize maximum returns on their investment in electrical equipment.

(2) Practical advice on how to plan the farm wiring system to most effectively meet present needs and at the same time provide for future expansion with maximum economy.

(3) Information on how to select appliances and equipment best suited to their individual farm needs. This would include information as to the kind, type and size of equipment that would best meet their requirements.

(4) Training in the care and operation of electrical equipment for maximum efficiency and length of service.

To whom does the farmer look for this information? As in the case of his other agricultural problems, he generally looks first to the Land-Grant College as the source of correct and unbiased advice. Because of the unusually close interrelationship between the quality of the electric service, the design of the equipment, and its operation he also will depend heavily upon the power supplier and the equipment dealer for advice and assistance.

This challenge can be met adequately only by a soundly planned and carefully executed program of education by the Extension Services, the electric power suppliers, the manufacturers of electric

equipment, and all others in any way interested.

We, in Extension recognize this educational responsibility and already have done much work in this direction. You, in the electric industry, have also done many things to help the farmers know, understand and use the powers and services of electricity. But we have all just begun.

Within the Extension Service, the development of farm and home electrification programs normally falls within the scope of Agricultural Engineering and home improvement. Many states now have subject matter Specialists in Farm Electrification and in Home Electrification. In other states, quite effective work is being accomplished by other subject matter specialists emphasizing the proper use of electricity in their respective fields. The specialists in poultry husbandry, horticulture, home management, food preparation and preservation for example, all have opportunities to aid in harnessing electricity to the task of doing a better job. There is indeed hardly a segment of farm and home activity that cannot be touched by some phase of the use of electric power.

The county agricultural agent and the county home demonstration agent are the spearhead of the Extension educational program. They transmit ideas and known facts directly to the farmer who in turn transforms them into action and results.

### Farm Education Programs

The methods and procedures used in conducting an educational program in farm electrification are those which have proved successful throughout the 30 years of Extension's life. Some of these are: the farm demonstration, group meetings, short courses for farm people, training schools for farm leaders and 4-H club activities. These methods are supplemented by such tools as appropriate bulletins, leaflets, news stories and feature articles. Individual assistance may be needed in rare cases, but it should always be held to a minimum. One of the most appealing and productive ways of reaching and teaching farm people is through properly planned and directed programs and contests among 4-H club boys and girls. By effectively reaching them, we not only reach the on-coming generation but through them we frequently influence the parents of this generation more efficiently than if we had aimed directly at the parents.

Most of the suppliers of electricity and the manufacturers and distributors of farm electrical equipment clearly realize the importance of conducting strictly educational activities to aid rural people in the selection, operation and maintenance of equipment. They know that an aggressive educational program to teach farmers how and where to use electricity to the best advantage will, as a matter of course, lead to the sale of power and equipment. A number of these organizations many of which are represented here already have such programs, many with long and successful records of accomplishment. Other groups now are entering this field of activity. Quite a few of them are coming to the Extension Services for personnel whose background and training they think will best fit them to do this educational job.

### Coordinating Personnel

We are always glad to join hands with these groups, agencies and organizations in sound educational programs designed to take proved practices and useful information to farm people. Furthermore, we believe that the Extension Service will be rendering a real public service by taking the lead in coordinating the facilities and activities of such organizations to the end that there will be a maximum of achievement.

I believe all of you will agree that perhaps the most pressing problem in the field of farm electric utilization is the training of personnel. Only a very few, probably a fraction of one per cent, of those now in service or to be employed within the next few years in the Extension service and in the electric industry have had the basic training and experience necessary to wisely guide and assist the farmer and his family to a full realization of the benefits of electric service.

The majority of our agricultural colleges are now making rapid progress in training young men and women for future leadership in the field of farm electrification. This, however, will not solve our present problem. Since the men and women in immediate need of training are all now employed on a full-time basis, the program must be carefully planned to fit into the regular schedule of work with a minimum of interruption and time off the job.

Probably the best means of accomplishing this in-service training will be a series of intensive schools of one-half day to one week duration held at the agricultural college or in the field. The training should be done with small groups to be fully effective.

Here again is presented an excellent opportunity for the full coordination of the personnel and facilities of the educational agencies, industry and the various other interested groups. Fortunately, between us we do have a nucleus of capable, experienced men and women in the field. Some of these could boast of 15 to 20 years, or even more, of continuous service. We also have a wealth of excellent teaching aids in the form of bulletins, reports, special demonstration equipment, movies, and other illustrative material.

I should like to take this opportunity to commend the leaders in the electric industry for the aggressive programs you have had and are now expanding in promoting the general development of the agricultural industry in the areas served by the various operating companies. It is still true in most sections of our country that agriculture is the basic source of income and new wealth. As it prospers so will the entire community.

It is probably inevitable that as your agricultural programs progress you will begin to plan them further into the future. In order to get experienced personnel, you will from time to time come to our Extension organizations to employ either some of our specialists or some of our county Extension forces. This is natural and is a compliment to the Extension organization. I would like to suggest to you and to the industry you represent that we well might cooperate in a better thought-out plan for assisting selected Extension workers in more adequately preparing themselves to do a better job in their counties and in any other tasks to which they may be called later. I refer particularly to the need for some plan of providing for advanced or post-graduate study by Extension agents now in the field.

### Prosperity for Farm and Factory

In closing, may I say that both for today and tomorrow, our greatest prosperity in this country will come from a combination of a prosperous and progressive agriculture and industry. When either is in trouble, the other soon gets in trouble also.

Let us join hands in a carefully planned educational program to help accomplish our real goal which is the maximum use of science in both agriculture

(*Continued on page* 143)

# Agricultural Workers' Part in Farm Electrification - II

**By Jessie Campbell**
*Home Demonstration Agent, Pontiac, Ill.*

An address before the Farm Section of the Annual Sales Conference of the EEI, at Chicago, Ill., on April 1, 1947

ALL of you who are concerned with having more electricity on more farms are working for the same things that the Home Demonstration Agents want for rural America.

The Home Demonstration Agent with her broad assignment to assist the 4-H Club members and the adults in Rural America to achieve that which is variously called "The Better Life" or a higher standard of living, wants for her "customers," whom she calls cooperators, the products and service you have to offer.

We, who work in Rural America have some opportunities, and I would go so far as to say moral obligations to the whole of our Nation. This field of opportunity and obligations grows from the fact that rural America produces something like 80 per cent of the children of the Nation. The deduction is very direct. The future of *All America,* not just rural America is very closely related to the kind of rural America we have. That has been said so many times it is trite, but never the less true. Now—What are our opportunities for helping to make rural America capable of producing that 80 per cent base stock good enough to keep America great?

Electricity can take the drudgery out of farming and housekeeping—fine—*so far.* When the high-line goes down the road to every farm there are two areas opened for our sales effort. First, to utilize the power to do more than furnish light; and second, to have a constructive use for the more money and more time which is made available.

I have very great admiration for the accomplishment in the area of utilizing electric power for more than light. The greater production with less labor is incentive and has a quickly tangible reward in more income. But at that point, in our experience we have run into some problems we are struggling with and with which we need all the help we can get.

May I take time here to give you the geographic range of my experiences, so you can judge the limitation of what I offer. I have worked only in the Middle West—Kansas and Illinois. My experience with rural electrification dates back to 1936 in our Central Illinois, Livingston County—when our County Extension Service went "all out" to develop our area service policy with the cooperation of the three power companies which service the county. Approximately 90 per cent of our farms now have electricity available.

Now, back to the problems that are facing us after we have the high-line—after we have made good progress toward more income. We are not doing so well at transposing income into some important standard of living items—specifically bathrooms. The 1940 census figures for Livingston County show 3900 farms—2900 do not have bathrooms—2800 do not have running water in the house, and only 1700 had *any* mortgage on the land.

The Extension Service has been persistent and, I believe, consistent over a 30-year period in presenting information. Our utility companies have been active with programs of electrified demonstration farms and other educational-promotion efforts, and so far we have 3 out of every 4 of our farm homes with the Johnnies and Marys growing up with all of their actual, first hand, bathroom experience limited to the shower at high school, billboard advertising of the Stevens Hotel, and when they have gone to visit Uncle Bill (Dad's brother who works for the utility company).

*Dad's standard of living must compare favorably with Uncle Bill's if a fair share of America's best youth is to stay in Rural America.* I now stick my neck way out, to say:

If that is to be brought about—you must assume a large share of the responsibility for doing it. If it is to be done we must change what the sociologists term our American Urban-dominated culture. That—as I understand it, is our pattern of thinking of the good things being as, and of, the City. An example, picture all the hundreds of front doors on farm homes that are never used. The houses were not designed for farms, they were built like the house in the city—and of course when we do go to visit Uncle Bill things are handy—Aunt Sue has the nicest kitchen and Uncle Bill has a dandy workshop in the basement!

We know the situation. We recognize that changing a cultural pattern is not a sudden thing but we know too, that it has been done. One instance where a powerful advertising campaign has accomplished a cultural change since 1920. The cigarette people deliberately and very skillfully set about changing the American attitudes about women smoking!

You represent tremendous resources. If the goal of a substantial American rural culture is clearly visualized you can hire the brains to discover better and quicker techniques. I can't presume to suggest How (if I knew how there would be better results showing where I work) but I think I can suggest *Who.* My observation over 20 years of working with women has me completely convinced that women get what they want! If advertising and related selling technique is keyed to make them really want, say bathrooms, they will be had. Of course, the thing women want most is to please their men. Advertising could keep that in mind too.

If through the devices of our respective trades we can make Mrs. Rural America know she wants running water, in her home—Mr. Rural America will get it for her.

May I review quickly what I have tried to present? We have a selling job that goes over into getting farm families to provide for themselves the environment of good living. We have used running water as an example.

We have evidence that making more income available is not the complete answer. We recognize that the situation is vital enough to challenge us to bring the best our respective fields of education and business can offer. We want the 80 per cent of America which is born and educated in rural areas to have a chance to be truly America at its best.

# An Important Book on an Important Subject

ANATOMY OF DEPRECIATION *by Luther R. Nash, S.B., S.M. (Public Utilities Reports, Inc., Munsey Building, Washington, D. C., $5.00) 214 pp. + x.*

THE public utilities, as a group, possess one inherent characteristic, which differentiates them from the generality of industrial enterprises: the relatively large ratio of investment in fixed plant to annual gross sales. This ratio with the utilities is about seven times as great as for the average manufacturing industry. This comparatively high plant investment gives corresponding importance (for both investors and consumers) to the matter of depreciation.

To the clear discussion of this subject, Luther Nash, in his forthcoming book entitled "Anatomy of Depreciation," has brought the benefit of his unique experience of over forty years in the analysis and presentation of all the basic factors which enter into accurate utility accounting. While thoroughly covering all the many details of this important subject, the book is conspicuous for its terseness and brevity. It should prove a valuable book of reference in the future study of depreciation problems and practice by both utility companies and the governmental bodies which regulate them.

The book recognizes the controversial nature that the subject of utility depreciation has acquired in recent years. This controversy has appeared to be one between Theory and Fact. Theory requires, properly enough, that the gradual replacement over the years of the discarded parts of the huge utility plant is just as much a part of the cost of furnishing utility service as are wages, interest, taxes and other such items which are paid out currently in cash and are therefore capable of the most accurate accounting determinations. No one familiar with the utility industry will question the soundness of this basic theory; but its presentation, in many cases in recent years, has been accompanied by the claim that the utilities in the past have not been alive to this basic requirement, that consequently the utilities have not provided adequately for this long-term retirement of abandoned parts of their plant and that, therefore, to that extent, their published financial reports do not accurately reflect their true financial condition.

If this claim could be substantiated, it would indeed be a serious matter for both investors and consumers, for it would indicate that utility stockholders had been living in a fool's paradise, or that rates for utility service had been inadequate to pay for the costs of such service. To this fundamental matter Mr. Nash has brought the test of fact. He has analyzed the accounting records of seventeen electric utility companies, with regard to the replacement of discarded plant, over a period of over thirty years. In doing so he has chosen companies which had been in successful operation for an even longer period and has taken only companies which have been exclusively electric in their operations and which have developed in their own territory. This choice was made in order to eliminate such errors as might arise from the inclusion of other kinds of service, or from large accretions of territory not formerly served by them. This choice, from its nature, required the elimination of a large number of companies not fulfilling the criteria mentioned, but it did total up to one-fifth of the entire investment in the electric utilities of the country.

This long and comprehensive record of actual accounting practice showed: that the reserves for retirement of property, in per cent thereof, had grown from 3.4 per cent to 20 per cent during the thirty-year period; that in only one year of that period had this percentage decreased; and that in the last seven years the per cent of plant set aside for retirement had been only three parts in one hundred greater than in the seven prosperous years ending in 1929. This record of sound judgment, consistently applied over this long period, long before the present day controversies, should be most reassuring to all investors in this 13 billion dollar industry and to their customers.

I have emphasized this factual finding because it represents what, in the last analysis, is the end result of all depreciation accounting. I have emphasized it also because the effect of any depreciation accounting plan, with property of such long life as the electric utility plant represents, must, for that very reason, be a long-term effect. It seems, therefore, not only logical but essential to apply to any given theory or method the recorded results of long years of actual accounting experience. If, as the record shows, the methods used over long past years have been completely adequate to care for the gradual replacement of plant which we call Depreciation, then the only question for the future is: whether the nature of electric plant development in the last decade or so has been such as to modify past experience in the future.

As to this point, the evidence indicates that the average future life of electric utility plant should be substantially longer than the average of the past thirty years. Mr. Nash quotes analyses that have been made, of the causes of taking utility plant out of service, which indicate that 72 per cent of such retirements in dollar amount arose from "functional" causes, such as inadequacy, inefficiency or obsolescence. Since the whole tendency of size and efficiency of electric units in the last two decades has been toward greater stability, it would seem inevitable that future annual costs of retirement of discarded plant would be gradually decreasing rather than increasing percentage of plant. In a word, there appears no reason for increasing the percentage amount shown by thirty years' past experience to have been adequate.

The points I have discussed in this brief review are only a few among many the book covers; it must be read and studied in order to get all of the information it contains. I believe, as above stated, that it should prove an invaluable reference book for all who are interested in the utilities—as investors in their securities, as users of their services, or as their regulators in the interest of both. Having been associated with Mr. Nash during the major part of his professional career, I can testify to the care, thoroughness and integrity of his work of which the present book is a shining example.—C. W. KELLOGG

# Increased Production Through Production Methods

By John D. Sheahan
*Drake, Startzman, Sheahan, Barclay, Inc.*

An address before the Industrial Power and Heating Section, EEI, at the Annual Sales Conference, held at Chicago, Ill., on April 1, 1947.

THE time has long since passed when it is necessary to speak to American business men about the possibility of cutting costs through modern materials handling. So many companies have reduced the cost of handling their products by such great percentages that this development holds a place in the forefront of most management planning today.

However, there is some danger in this sudden realization of the great economies that can be accomplished in the physical part of getting our goods to market that direct cost cutting has been emphasized and there has been a tendency to overlook certain collateral benefits.

It is obvious that each time you cut out a motion in the handling of your products you have a chance to reduce your handling costs. It is also obvious that handling includes much more than bringing the raw stores to the point of manufacture and removing the finished product from the end of production to the point of consumption. A major part of materials handling is the movement and control of supplies through the manufacturing process. In other words, the movement of production components and partially processed material from one manufacturing operation to another. This is where the materials handling engineer and the production engineer come together, and where one supplements the other.

### Production Handling Methods

It has been accepted without question that production costs are the major determinant of price. More recently it has been realized that handling costs are nearly as important a determinant in general and more important in certain products, but it has not been so fully realized how handling methods affect not only handling costs but production costs as well. I think that point deserves the careful attention of this conference and I propose to cover it briefly here.

Practically every manufacturing cycle consists of a series of processing operations. They constitute a series because they follow each other in a sequence although they are frequently unrelated in nature and in duration. In most operations the sequence can be broken although not usually transposed. However it is commonly accepted that under the ideal method, the product progresses without interruption through a series of processing motions which progressively change it from the raw product to the finished article.

### Adjusting Process Flow

In the manufacture of most products however, this orderly progress runs up against the problem of adjusting for the variations in duration of the several processing operations. This can only be solved by applying the proper handling techniques. The application of proper handling techniques not only saves expense through the reduction in labor, but also usually reduces the amount of spoiled work and the amount of unproductive space in the plant.

Perhaps still more important than this, however—and this is the crux of our subject—it brings about a more full utilization of production machinery, avoids or breaks bottlenecks in production, and therefore accomplishes exactly what we are talking about—increased production through materials handling.

Let's take as an example of the problems that the objective of smooth production poses to the materials handling engineer, a hypothetical die casting plant. In our example the die casting machine can produce 500 castings an hour. These castings must go through a stamping process, a filing process, a cleaning process, and perhaps also a plating and a buffing process. Each one of these processes requires different amounts of time to complete. The stamping machine may handle 1000 or 1500 castings per hour, the filing process perhaps 300, the cleaning process the approximate output of the casting die, and if the casting is to be plated, it may be necessary to accumulate a full day's output to go through the tanks at one time. Buffing time again may vary widely even on the same run of castings.

It will be obvious that if the stamping machine can handle twice the output of the casting machine, the simplest solution is to set up two casting machines for one stamping machine. It will also be obvious that this can rarely be done because, unless a casting run is on one casting for a long period the ratio between casting and stamping may be entirely different within a few days or few hours. Especially in job casting, casting runs may vary from a few hundred to a million pieces or until the die is worn and has to be replaced. Similar variations occur in all the other processes outlined above. If all the processes were of equal duration, the handling problem would be simple indeed. The most logical answer would probably be a conveyor to move goods in process from one operation to another, and the chief problems confronting the engineer would be to so lay out the conveyor as not to intefere with traffic through the plant, not to interrupt operators' motions, and to bring them the work and take it away from them with a minimum of perpendicular motion on the part of the operator to position the piece he is working on.

### Gearing Up Production

However, in the manufacturing cycle I have just discussed, under such a system all machinery and workers are held to the pace of the slowest process. This means one of two things, either both machines and men work at fractional capacity through the entire shift or shifts during which the plant operates, or certain machines and operators work at full capacity for a portion of the shift or shifts and then the faster machines are cut out and stand idle and unproductive while the item it has produced is assimilated. In the case I have illustrated it would be the die-casting machine and the stamping machine, two very costly

items of equipment which can earn no return on the capital investment during the period of idleness. Not only is capital investment unproductive, for a portion of the time, but that plant falls short of the objective of increased production.

### Banked Goods

The solution to the problem of course is to create controlled banks of goods in process and to feed them into the slower operations as efficiency dictates. Under this system a more flexible method of movement than conveyor must be employed for at least a part of the operation. This is not an argument against conveyor as such. When the flow of work is uninterrupted and at a fairly uniform rate, conveyor is usually the ideal transportation method. It is when the flow of work is intermittent and when the sequence of processing motion must be interrupted or suspended that other methods must be employed.

The oldest substitute is a man carrying, or transporting goods on a hand truck. The newest is frequently a fork truck handling goods on pallets or skids, or a fork truck worked in combination with a tractor-trailer train. It is the development of the fork truck and the pallet that has given the great impetus to a re-examination of the old problem of materials handling and has made business management which hitherto has had a single eye to production, increasingly conscious of handling techniques not only at the beginning and end of production, but during production as well.

The attention that top management is now giving to the handling of semi-processed production components during production is bringing about major changes in the layout of American factories. The development of the fork truck and its smaller relatives, such as pallet jacks and hand-lift trucks, has enabled conversion of former straight line production systems to the more efficient departmental system of grouping machines. Where a number of related production sequences are carried on the application of this type of equipment is almost uniformly indicated. With an industrial truck system material can be delivered quickly and economically either from the storage area or from zone banks which have been set up to compensate for the variation in duration of different manufacturing operations.

The reverse movement is equally flexible and semi-processed material can be removed from the machines to await the readiness of the next operation to assimilate. This flexibility and the departmental system of grouping machines opens up plant space and usually permits a much higher utilization of floor area. Parts can be brought to the machines from the banks or from other machines just as required and the increment of replenishment is subject to close control. Replenishment requirements are signaled by the contents remaining in the tote box or skid from which the operator takes his work, thus reducing waiting time and increasing hourly production.

I do not want to give the impression of minimizing the importance of efficient materials handling in the receipt of raw stores and in the warehousing and shipment of the finished product. The problems are very similar and the same general principles apply. For this reason many companies are beginning to consolidate all storage-handling-transporting functions under one head.

Before consolidation, receiving and storing of raw stores is frequently found under Purchasing, inter-plant transportation and the movement of material in the manufacturing areas under Production, warehousing, packing and shipping of finished production under Traffic, and control of regional stocks under Sales. But all these functions are technically inter-related. There is no sense in having four or five different departments running them — frequently at cross purposes.

### Mechanizing Materials

It follows therefore that the first step is proper organization and to get this, organization charts must first be drawn. These should show in detail the authority and responsibility of each key position. Second, competent personnel must be assigned to the proper positions. In the past the men responsible for materials handling even in large and otherwise efficient organizations have frequently had little technical training and a few months or years as a shipping clerk or warehouse worker has been considered sufficient apprenticeship. The same caliber of managerial or executive ability that was demanded of the key men in production and sales was not thought necessary in the field of physical distribution except in the special job of traffic manager.

Mechanization of materials handling is the key to many economies and to increased production but it is not the only answer to the problem. It is wise first to make sure that the best possible job is being done with existing facilities and equipment and only after they have been fully and efficiently utilized by soundly organized and trained personnel should changes in facilities be considered. More harm than good may result from superimposing a mechanized operation on a disorganized department.

### Handling Methods Fundamentals

But, if you first have the organization and the trained personnel, a mechanized operation can often cut handling and storage costs in half, or better. It can simplify every step of getting your product to market. This has been proven by hundreds of case histories. Sometimes equipment has paid for itself in a matter of weeks. But it is necessary to understand a number of fundamental handling principles if the operation is to be a success, for it is the equipment that makes it possible to function under these principles, and it is these principles in operation that justify the equipment. Many of these principles have been understood in theory, for years, but their practical large-scale application is a development of the war years and since. The five main principles of sound storage and handling are:

1. *Handle Materials in Large Units:* A two-wheel hand truck is better than a man's hands, a four or six-wheel hand truck is better than either, but a lift-truck-pallet combination is the highest development to date.
2. *Avoid Rehandling:* Every time you pick up materials and put them down again, it costs you money. Arrange your system so that you handle your goods as little as possible. "Processing motions add value to a product, handling motions add only to cost."
3. *Balance Men and Equipment:* Assign no more men and no more equipment to a job than necessary. Remember equipment sets the pace for men—not men for equipment.
4. *Select Equipment Suited to the Job:* Study your operation. Find out exactly what equipment you need and standardize on that. The nature of your facilities, floor-load capacities, ceiling heights, volume of material to be handled, intermittent or steady flow, commodity characteristics and strength of package all have to be considered. The determination of types of handling equipment is the end prod-

(*Continued on page* 144)

# Increasing Production Through Methods Analysis

By Harold B. Maynard

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An address before the Industrial Power and Heating Section, EEI, at the Annual Sales Conference held at Chicago, Ill., on April 1, 1947.

THE key to success in industry is the ability to produce goods of high quality at such an attractive price that the buyer is willing to part with his hard-earned dollars because he feels that he is getting his money's worth. Aside from a few essential articles, there is nothing that anyone *has* to buy. The only reason that a man does buy is because he feels that he will get more satisfaction from the possession of the article than he will from possession of the money or of some other article. Hence the plant that wishes to keep busy producing an ever increasing quantity of goods must produce effectively so that the prices of its products will seem attractive in comparison to other prices.

The way to competitive prices is through increasing production. True, good design, proper materials, and other factors enter in, but high productivity is essential if low costs are to be realized. How can we attain high productivity? The answer is fairly simple. We can attain high productivity by constantly improving production methods.

### "Any Method Can Be Improved"

Let me emphasize the word "constantly." The methods engineer goes about his work with one fundamental principle always in his mind. It is "Any method can be improved." Experience has shown him that there are few methods which cannot be improved, not once but many times, if sufficient thought is given to them. The seasoned methods engineer will never refer to the "one best method" of doing a given job in the sense of meaning that perfection has been achieved and that no further improvement is possible. Instead he will speak of "the best method yet devised," implying recognition of the fact that further improvement may be possible, even if from an economic standpoint it may not be practical at the time to seek it. Carrying this thought to a logical conclusion, the best method of doing an operation from a labor economy standpoint is reached only when the labor required has been reduced to zero. Until this point has been reached, further improvement is always possible.

This principle furnishes the foundation for the successful approach to methods improvement. If it is clearly recognized, it insures an open mind. Such mental obstacles as "it won't work," "it can't be done," and "it was tried before and didn't work" are cleared away at the outset. Lack of success in improving any job is not interpreted to mean that the job cannot be improved, but rather that no way of improving it has yet been discovered. There is a vast difference in the two interpretations. The first induces contentment with things as they are and leads to stagnation; the second inspires further attacks from different angles, and leads to progress.

If any job can be improved, then all we have to do to increase production is to want to improve methods enough to make the necessary effort. Unfortunately in our modern, complex society not everyone has a sufficiently sound understanding of economics to want to believe whole-heartedly that increased production is altogether desirable. Let's see why this is.

The normal individual desires certain material things in order to make his life more healthful, comfortable, and secure. In order to get the material necessities he needs and the luxuries he desires, in greater quantity than he can himself produce, he usually seeks a job. When he has secured it, he finds that he can purchase with the money he earns at least part of the things he wants. Hence, he comes to look upon money as the thing that feeds and clothes him. The job that yields the money becomes something valuable which must be protected at all costs.

### Production, The Basic Factor

In many cases, he joins together with a group of his fellow workers and takes whatever action he feels is necessary, first, to protect his job, and second, to obtain more money. The complexities of modern society are such that he tends to lose sight altogether of the one factor that gives him the things he wants, viz., production.

In primitive times, each individual realized clearly that if he was to live, he had to produce. He hunted or raised his own food; he built his shelter with his own hands; what clothing he wore, he fashioned himself. Not to produce was to go cold and hungry. He found that he prospered in accordance with his own ability and efforts.

For some time, each individual or at least each family group was self-sustaining, doing everything necessary to support life without being dependent upon anyone else. At length, however, certain individuals found that they excelled at a given task. One man was a good hunter, another was clever at erecting shelters, while a third became skilled at fashioning garments from skins. They found by a process of trial and error that if each man would devote all his time to the task for which he was best suited and exchange his surplus production for the surpluses produced by the others, all would have more than when each attempted to do everything for himself. The same number of people working the same length of time could obtain more material things by this process because greater production resulted.

### Money Vs Production

It was easy to recognize this fundamental fact when social organization was simple. In order to have more material things, more had to be produced.

The same principle operates today, although it is less easy to recognize. Because a man often does not produce the things he consumes or does not directly exchange what he produces for the things he consumes, it is difficult for him to realize the importance of production. Instead, as has been pointed out, the individual tends to value money and job security and to minimize the importance of production. In fact, some individuals feel that it is altogether desirable to insist upon getting as much material goods (as represented by money) as they can in exchange for doing as little produc-

tive work as possible. It is difficult for them to realize that instead of being in an enviable position under these circumstances, they, by not producing, are making their group or country poorer than it would otherwise be. If they are able to secure a high return in the form of high earnings for low production, it can only mean that someone else must do with less.

In a small, isolated community, this would be readily apparent. The drone and the shirker would not long be tolerated. In a highly complex society, the relation between production and consumption is obscured. Men feel that they are working for money and that somehow, if they can only get enough money, it will not be necessary for them to produce. The fallacy of this is apparent the moment one carries the thought to its logical conclusion. If a given amount of money, say $25,000, were enough to keep a man in necessities for life, then theoretically he would never have to work again if he only had $25,000. If, acting on this assumption, a utopia-minded government worked out a plan whereby everyone in the country were given $25,000, then theoretically the millennium would be reached and no one would ever have to work again. Actually, of course, the result would be quick and painful starvation. If no one produced, all the money of Midas would be valueless as far as maintaining life is concerned.

### Production For Prosperity

Hence it may be seen that production is the basis of prosperity. A great deal of controversy exists concerning the proper procedures for distributing what is produced. Under any plan which may be advanced, however, whether it be called "capitalism," "socialism," "communism," or any other ism, the fact remains that we can distribute only what we produce. If Americans as a social group want a higher standard of living, the only way they can get it is to learn to become more productive. If, in addition, they wish more leisure time to enjoy the things they produce, then they must learn to produce them in less time.

This is fundamental, although it is often lost sight of in the complexity of our present social organization. It is not unusual for a labor group to demand higher wages and job security. It is unusual for them to demand that management show them how to become more productive so that there will be more to distribute as the result of a given amount of work or so that the same amount can be produced in a shorter work week. The feeling is strong that by producing more, a man will work himself out of a job. So the individual strives to make his job secure. Certainly there is justification for that viewpoint in some cases. But under wise leadership, it should be possible to become more productive and more secure at the same time, to produce more and to have more.

### Methods Analysis To Increase Production

That is the problem which challenges the leaders of industry, both labor leaders and management representatives. A way must be found of increasing productivity so that everyone will be benefited not only in the long run but immediately. Make-work schemes for keeping people employed at a low level of productivity only serve to prevent the standard of living from improving as rapidly as it can.

We can have only what we produce. To have more, we must produce more. To have the leisure to enjoy it, we must learn to produce it in less time. This is the way to plenty.

The truth of this is so evident when we reason it through that it seems almost too elementary to talk about. Yet we see on every hand so much evidence of economic wrong thinking—strikes, featherbedding, plowing under little pigs, seeking security by producing less—that there is need for stating and restating the basic worthwhileness of productivity in all our daily contacts so that by spreading understanding we will help provide the proper atmosphere for methods improvement work.

The techniques of methods improvement are for the most part quite simple. Methods analysis is sometimes defined as "common sense, systematically applied." An open mind and the ingrained habit of asking "why" about every phase of every job will uncover countless opportunities for improving methods. "Why is the job being done this way?" "Why do we use this type of a tool?" "Why is the material supply located where it is?" In fact, why are we performing the operation at all?"

To those who are accustomed to hearing about the efficiency of American industry, it is difficult to believe that much unnecessary work is done, yet I can assure you that it is common experience to find that 30 per cent of the work which is done in producing a given product is either unnecessary or can be done in a much easier, simpler way. Any methods engineer can tell of case after case of work being done which was so obviously unnecessary as to be laughable, yet which was done day after day until he finally came along and asked the question "Why?"

Although the mere application of what is known to methods engineers as "the questioning attitude" will get surprisingly good results, there is a good deal more to methods engineering than this if maximum results are to be obtained. Without wishing in any way to become involved in technical detail in view of our limited time, I would like to describe briefly the principal techniques used to obtain increased production.

### Increased Labor Effectiveness

Methods engineering is the industrial science which is chiefly concerned with increasing labor effectiveness. This is a brief definition which is descriptive if clearly understood, but it is likely to leave misconceptions in the minds of those who are not fully acquainted with the procedure, for they are likely to confuse labor effectiveness with labor effort and are likely to believe that the procedure is designed to get more out of the worker by making him work harder. The reverse is, of course, true. A better and more complete definition is as follows:

> "Methods engineering is the technique that subjects each operation of a given piece of work to close analysis in order to eliminate every unnecessary operation and in order to approach the quickest and best method of performing each necessary operation; it includes the standardization of equipment, methods, and working conditions; it trains the operator to follow the standard method; when all this has been done, and not before, it determines by accurate measurement the number of standard hours in which an operator working with standard performance can do the job; finally, it usually, although not necessarily, devises a plan for compensating labor which encourages the operator to attain or to surpass standard performance."

The definition shows that methods engineering consists of four major steps. First the method of doing the job is studied and usually improved. Next the

new method is taught to the operator who will do the job. Then the job is time studied to find out how long it takes to do it under normal conditions. Finally some sort of wage incentive system is set up to insure that the right method will be followed and that a steady effort will be exerted.

To summarize, the four steps of a complete methods engineering study are as follows:

1. Method analysis and improvement
2. Operator training
3. Time study
4. Wage incentive application

A methods study always begins with a careful preliminary analysis of existing conditions. The first factors which are considered are the number of pieces made or the yearly activity, the length of the operation, and the hourly labor rate. This information permits the computation of the yearly cost of the job. An estimate is next made of the probable improvement which methods study can make. This in turn determines the kind and amount of methods work which can profitably be undertaken.

Assuming that a fairly detailed study is indicated, complete information is compiled concerning such points as the purpose of the operation, inspection requirements, material and material handling, and tools and equipment used. Not infrequently this part of the study requires more time and accomplishes greater results than the succeeding steps, particularly when the analysis is made by a trained methods man of work which has not received much previous consideration.

When all known facts relating to the process, job, or operation have been ascertained, a secondary analysis, usually called motion study, is made, assuming always that the time required to make it is justified by the expected results. At this point, each individual motion used in doing work is considered in detail, not with the idea of attempting to get the worker to make it faster, but rather to try to shorten the motion or to eliminate it altogether. Motion study leads directly to methods improvement, and the improvement is obtained by devising an easier and less fatiguing way of doing the job.

After the new method has been devised, equipment and conditions must be standardized so that the method can always be followed. Information and records describing the standard procedure must be carefully made and preserved, for experience has shown that unless this is done, minor variations almost inevitably creep in and in time cause a major problem.

The operator or operators must next be taught to follow the new method. This may be done by verbal instruction, demonstrations at or away from the workplace, instruction sheets or operator process charts, or by the newer and highly successful technique which employs motion pictures.

Operator training is always important if a reasonable production is to be obtained, but it is an absolute necessity where methods have been devised by motion study. The best way of making each motion for each bodily part employed is carefully worked out by means of analysis and observation or motion picture analysis, and a method which eliminates all useless or unprofitable motions is devised. This requires from a few hours to several days of concentrated study. It is quite apparent, therefore, that the operators cannot be expected to discover for themselves the method which the engineer works out in this way, since they have neither the time nor the specialized knowledge necessary. Hence they must be carefully trained if they are to be expected to reach maximum production. Since time values are established for the best methods, if the operators do not know and use them, they will fail to meet the allowances and will soon become dissatisfied and discouraged.

When the new and improved method has been devised and put into effect, the time required to do the work is carefully measured, usually by stop-watch time study. The measurements take into consideration the skill and the effort of the operator, and the final time allowance is based upon the standard performance which is expected from an operator who has been working at the class of work long enough to know it thoroughly, who is not unfitted for the work by nature, and who possesses normal intelligence and enough education to perform satisfactorily the work at hand. The final time value which is established includes allowances for time lost due to fatigue and personal and unavoidable delays.

When the method is devised, the operators trained, and a correct time allowance determined, a procedure is next established to insure that the method will be followed and that standard production will be attained. This procedure usually takes the form of an incentive plan, although it may call only for close supervision.

What type of work does methods engineering apply to? It applies, of course, to all types of productive work in all types of industry. It further applies to many of the so-called indirect labor activities. Progressive organizations who have applied methods engineering to increase production on their respective operations in the past, are now beginning to apply it to such work as tool making, storerooms, receiving and shipping, maintenance, and janitor work. The savings obtainable on this type of work are exceedingly attractive, for although it requires time and a high degree of engineering competence to realize them, the fact that they have not received much attention in the past, means that major possibilities for improvement exist.

After making a study of janitor work recently in a certain plant, we came to the conclusion that this was the highest priced labor in the shop based on labor effectiveness. In addition to a working pace which can only be described as slow motion, the methods used were so antiquated and unplanned that the mere asking of the question "Why" and following up on the obvious answers resulted in a 100 per cent increase in productivity before a single time study was made. The company that would wish the prospective purchaser to wonder "how they can do it for the price they charge" will do well to push methods engineering work on indirect as well as direct labor operations.

This discussion of "Increasing Production through Methods Analysis" has perhaps dealt more with simple economics than it has with methods analysis techniques but this has been done purposely. The techniques are available and under proper conditions of application will result in production increases of 20 per cent, 30 per cent, 50 per cent, 100 per cent, and even much more. What is needed is a constantly widening understanding of the value of the work so that management and labor working together will make the countless improvements which are waiting to be made when all recognize the benefits which arise from making them.

If you in your daily contacts with industry will continually promote the value of methods improvement, you will not only sell more power to expanding industry, but you will be promoting a higher standard of living for every man, woman, and child in this country.

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# PERSONALS

EDMUND CUSHING STONE, Vice President and General Manager, Duquesne Light Company, Pittsburgh, Pa., retired from active service on April 1, after thirty-six years of continuous service with the company.

Mr. Stone was graduated from Harvard University in 1904, with a B.A. degree and received a B.S. degree from the same school the following year. In 1905 he entered the employ of the Westinghouse Electric Corporation as an engineer on transformer design, serving in that capacity from 1905 to 1911.

He began work with the Allegheny County Light Company in June 1911, as Engineer of Cable Operation. In 1913 he was made System Operator, Duquesne Light Company, serving in that capacity until 1919, when he was appointed Assistant to the General Manager. In 1922, he was made Planning Engineer, and in 1927 System Development Manager. From 1931 to 1938 he was Assistant to the President, Philadelphia Company and Subsidiary Companies, and in 1938 he was elected Vice President and General Manager, Duquesne Light Company.

As first System Operator of the company, Mr. Stone developed and put in effect methods of operation of the power system by which the system, previously operated in isolated sections, was combined into a single coordinated unit, thereby laying the engineering foundation for the very reliable service now given by the company.

Mr. Stone was also the first System Planning Engineer of the Company, and a pioneer in the field of long range comprehensive planning for power system development. In this capacity he created a long-range plan for the future power system has been developed to its present capacity, adequate to meet the extensive requirements of the Pittsburgh district for electric power.

Mr. Stone is a Fellow of the American Institute of Electrical Engineers, and has served as Chairman, Pittsburgh Section, Director and Vice President of that organization. He was Chairman of the Engineering National Section of the National Electric Light Association in 1927-29. In this capacity, he promoted the slogan "More System Capacity per Dollar of Investment," which was promptly recognized and adopted as the guiding principle for power system engineering development. He is a past president of the Pennsylvania Electric Association, and served for several years on the Advisory Committee of the International Electro-Technical Commission. He is also a member of the Board of Directors of the Edison Electric Institute.

MR. STONE

During the years 1925-28, he was on the staff of the School of Business Administration of the University of Pittsburgh, and conducted a series of courses on the "Economics of Public Utilities." In 1927 he served as Graduate Lecturer in the Developed Scientific School of Yale University.

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DAN A. SULLIVAN of the Commonwealth Edison Company, Chicago, Ill., was honored for war services by the presentation of the President's Certificate of Merit at a dinner meeting of the Midwest Power Conference on April 1. The presentation was made by Brig. General H. L. Twaddle, U.S.A., before a group of technical specialists attending the "All Engineers Dinner" of the Conference.

The citation accompanying the certificate gave recognition to Mr. Sullivan's individual services as National Coordinator of the Utilities Wartime Aid Program "which proved to be an invaluable contribution to the war effort of the United States."

General Twaddle, in his presentation speech, praised the "teamwork" and "cooperation" supplied by the "best talent in our Country," whose expert knowledge had provided for the tremendous expansion of our national resources to meet the requirements "for new industrial plants and facilities for the training of troops." General Twaddle, speaking of individual wartime achievements added: "As a representative of the War Department, I am happy for the opportunity to participate in honoring an outstanding engineer who during the War gave his 'all' in furthering the war effort, and by his accomplishments personified 'teamwork' and 'cooperation.'" "During the war Mr. Sullivan served as utilities consultant and conducted surveys relating to emergency plans in event of utilities failures at various cities and Army installations. Later he rendered valuable assistance in reviewing and revising Technical Engineer Manuals pertaining to utilities for the Corps of Engineers."

The Certificate itself reads in part: "The President of the United States of America awards this *Certificate of Merit* to Dan A. Sullivan for outstanding fidelity and meritorious conduct in aid of the war effort against the common enemies of the U. S. and its Allies in World War II, (signed) Harry Truman."

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The election of CHARLES R. PRESTON, assistant to the president of the Oklahoma Gas & Electric Co., to a vice presidency has been announced. He has had 30 years' experience in the utility field, practically all of which was with the Electric Bond & Share group.

After studying engineering at Oklahoma A. & M., he joined the Texas Power & Light Co., Dallas. He left to serve with the Air Forces during the first World War and during this period studied at M.I.T.

In 1919, he became engineering inspector of construction of high voltage transmission lines for the Phoenix Utility Co., Hartesville, S. C. He followed this with a period of service with Moses, Pope & Trainer, consulting engineers, New York, and with the Phoenix Utility Co., Allentown, Pa.

Preston then spent a year with the Phoenix Utility Co. at Phoenix, Ariz., and from 1925 to 1935, he was with Florida Power & Light Co.

After joining the Oklahoma utility in 1937, he became assistant to the president in 1940 and a director in 1942.

EDGAR R. CROFTS, who has been vice president in charge of electrical operations at the Rochester Gas and Electric Corporation for the past three years, has been made the head of all operations, electric, gas and steam. Under his direction are also placed the purchasing, engineering and maintenance departments. Mr. Crofts has been with the local utility for more than thirty years, entering R. G. & E. employ a few years after graduating from Cornell. After filling various posts, including that of Purchasing Agent, he became General Superintendent of the Electrical Department. In 1944 he was made vice president in charge of electric operations.

LINN BOWMAN, former superintendent of East Gas Station, becomes Assistant Superintendent of Gas Manufacturing. He came to the company after his graduation from Cornell in 1925.

WILLIS E. HUGHES has been appointed Manager of the Employee Relations Department of the Rochester Gas and Electric Corporation. Mr. Hughes will have supervision of personnel, claims, safety education and general employee relations. He received his engineering education at Cornell, class of 1919 and entered R. G. & E. employ as a safety engineer 23 years ago. In addition to heading the Employee Relations Department, Mr. Hughes will serve as Superintendent of the Employee's Benevolent Association and as a member of the Company Pension Committees.

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LINCOLN F. KIELSMEIER, industrial sales representative for the Springfield Division of Ohio Edison Co., has been promoted to the newly created position of general industrial sales representative with headquarters at Akron. In his new position, he will assist all industrial sales representatives of the company on matters relating to power, heating and other applications of electricity to industry.

Graduating from the University of Colorado in 1925, Kielsmeier joined General Electric Co. and did graduate work at Union College. In 1926 he became an illuminating engineer for Ohio Edison at Springfield and four years later was put in charge of power sales work.

He is a member of the Industrial and Heating Section of EEI.

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ALBERT W. GRAY, assistant to the president, Hartford Electric Light Company for the past 21 years, and formerly chairman of the board of the Hartford Electric Steel Company has retired from active service. Mr. Gray was educated at the Massachusetts Institute of Technology, and in his earlier career was engaged in civil engineering in New England and the West, later becoming construction engineer for the Colorado Power Co., and then a construction superintendent for the Stone & Webster Engineering Corp., Boston. During World War I he was for a time works manager of Harvey Hubbell, Inc., Bridgeport, Conn., and later of the Billings & Spencer Co., Hartford, and the Bristol (Conn.) Brass Co. He joined Hartford Electric Light in 1926.

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SAMUEL ROSENBACH has been appointed general engineer in the electrical engineering department of the Duquesne Light Co., Pittsburgh, to succeed E. R. WHITEHEAD, who recently left the company to become research professor of electrical engineering at Illinois Institute of Technology.

Mr. Rosenbach's new duties will include special and general engineering studies and investigations, study of material and equipment, and preparation of specifications and standards.

Mr. Rosenbach entered the employ of the Duquesne Light Co. in 1922, and has served in the capacity of junior engineer, senior engineer, district engineer, field engineer and distribution engineer, the position he held at the time of his present appointment. He is a member of the A.I.E.E.

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L. B. LOCKLIN, formerly superintendent of Plant Atkinson, Georgia Power Co., has been made assistant superintendent of production of the company. Succeeding Mr. Locklin in charge of Plant Atkinson is R. S. CAUSEY, who has been promoted from position of assistant superintendent. C. D. EISENMAN, formerly chief electrician in north Georgia, has been made assistant superintendent of that area's hydroelectric plants.

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WILLIAM E. CASEY, acting manager of the Lawrence (Mass.) Gas & Electric Co. since September, 1946, and formerly assistant manager of the Worcester County Electric Co., has been appointed vice president and manager of the Lawrence company, succeeding ROBERT H. PATTERSON, who has been transferred by the New England Power System to the position of executive assistant to the president of the Malden Electric Co., who has general supervision over the North Shore, Northeastern and Mystic Valley districts of the System.

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W. W. ECKLES, formerly electrical engineer of the Gulf States Utilities Co., Beaumont, Tex., has been appointed planning engineer. R. W. SHERWOOD, formerly standards engineer, has been promoted to position left vacant by this change, with the title of design engineer.

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## Agricultural Workers' Part in Farm Electrification—I

(*Continued from page* 132)

and industry, each using the products and services of the other. That kind of cooperation will help put electricity and other services to work on the farms and ranches of the nation. That way we all profit.

The future progress of both agriculture and industry depend to a large degree upon the ability, experience and training of the leaders now developing. Your industry, and all other industries as well are interested in helping these Extension agents keep agriculture constantly abreast of the advancing front of science. This will be profitable to all business and therefore to the nation as well. More advanced training will help them to do this. In addition it will create a more adequate supply of personnel with the type of experience and training you would like your future personnel to have.

We believe that your industry will find it very profitable to establish scholarships available to young and successful extension workers. These should permit them to add to their successful undergraduate training, and their practical experience as extension workers, some graduate work or highly specialized training. These could permit broad and general training or narrow and specialized training, depending upon the conditions agreed upon by the donors and the particular institution handling the program.

This Extension Service scholarship idea as a means of developing future leaders for agriculture and industry is being developed in a small way in Texas with the cooperation and support of the Sears, Roebuck Foundation of this city. We will welcome an opportunity to explain the plan to any one interested.

## Increased Production Through Production Methods

(*Continued from page* 136)

uct of close and careful analysis.

5. *Move Materials in a Straight Line:* Make sure that your flow of materials is always toward the point of destination. Lay out your work areas so that back and cross-hauling is held to the very minimum. If you have a storage operation, study your item frequency rate. Items with the greatest activity should be warehoused nearest to portals of entrance and egress.

So much for principles. The list could be extended, but if these are satisfied, you will have a good operation. The trouble is that these principles are only just beginning to be applied.

I have not discussed the general principles of supervision, control, and planning, because they apply to any operation whether it be research, production, handling, or sales.

One of the major benefits accruing from sound materials handling is the better utilization of plant space. With construction costs at present levels and with most important construction materials still in short supply the full utilization of existing space is very important. As stated earlier, employment of modern mobile equipment usually opens up manufacturing areas but it is in the warehousing of raw stores and finished products that really great space savings are accomplished. Under manual methods it is usually impractical to store goods above the level that a man can reach, but by the employment of pallets and fork trucks, full utilization of your "air rights" in your plant can be made. The height to which you can stack goods is limited only by ceilings, floor load, and in some cases strength of package or commodity characteristics. Many a plant could store all the material which now seems to be bulging out the walls in two-thirds or less of its present floor area by employing modern high stacking methods. This would save not only capital and maintenance charges on space now wasted, but the actual placing in and removal of goods from storage can be done at a fraction of the man hours now consumed by hand methods.

I suggest that hereafter when you visit your customers' plants you keep an eye open to their handling methods because it is this department of American industry in which significant cost reductions can still be easily made.

# CONVENTIONS AND MEETINGS

**1947**

**MAY**

1-2 Pennsylvania Electric Association, Communications Committee, Roosevelt Hotel, Pittsburgh, Pa.

2-4 Westinghouse Agent-Jobbers Association, Hotel Claridge, Atlantic City, N. J.

4-8 National Electrical Wholesalers Association, Hotel Traymore, Atlantic City, N. J.

6-9 Northwest Electric Light and Power Association, Agricultural Clinic, Memorial Building, and Business Development Section, Olympic Hotel, Seattle, Wash.

7-8 Northwest Electric Light and Power Association, Business Development Section, Olympic Hotel, Seattle, Wash.

8-9 Southeastern Electric Exchange, Power Sales Conference, Thomas Jefferson Hotel, Birmingham, Ala.

12-13 Prime Movers Committee, EEI, Schroeder Hotel, Milwaukee, Wis.

13-14 Southeastern Electric Exchange, Home Service Conference, Thomas Jefferson Hotel, Birmingham, Ala.

15-16 Pennsylvania Electric Association, Prime Movers Committee, Castleton Hotel, New Castle, Pa.

15-16 Pennsylvania Electric Association, Electrical Equipment Committee, Irem Temple Country Club, Dallas, Pa.

20-21—Power Sales Conference, Joint with Pennsylvania Electric Association and Industrial Power and Heating Section, EEI, Hotel Hershey, Hershey, Pa.

22-23 Missouri Valley Electric Association, Blackhawk Hotel, Davenport, Iowa.

22-23 Pennsylvania Electric Association, Transmission and Distribution Committee, Irem Temple Country Club, Dallas, Pa.

26-28 Meter and Service Committee, EEI, Detroit Leland Hotel, Detroit, Mich.

26-29 National Fire Protection Association, Palmer House, Chicago, Ill.

27-29 National Association of Purchasing Agents, Chicago, Ill.

**JUNE**

2-5 EDISON ELECTRIC INSTITUTE, Annual Meeting, Atlantic City, N. J.

4-6 Pacific Coast Electrical Association, Annual Meeting, Mission Inn, Riverside, Calif.

18-20 Canadian Electrical Association, 57th Annual Convention, Algonquin Hotel, St. Andrews, N. B.

22-26 National Electrical Manufacturers Association, The Homestead, Hot Springs, Va.

24-27 National District Heating Association, The Chalfonte-Haddon Hotel, Atlantic City, N. J.

**JULY**

16-18 American Society of Civil Engineers, Duluth, Minn.

**SEPTEMBER**

5-11 National Electrical Contractors Association, San Francisco, Cal.

15-19 Illuminating Engineering Society, Roosevelt Hotel, New Orleans, La.

17-19 Indiana Electric Association, French Lick Springs Hotel, French Lick, Indiana

25-26 Southeastern Electric Exchange, Fall Conference Engineering and Operation Section, Henry Grady Hotel, Atlanta, Ga.

25-27 Southeastern Electric Exchange, Engineering and Operation, Henry Grady Hotel, Atlanta, Ga.

**OCTOBER**

6-7 Prime Movers Committee, EEI, Benjamin Franklin Hotel, Philadelphia, Pa.

6-7 Electrical Equipment Committee, EEI, Benjamin Franklin Hotel, Philadelphia, Pa.

6-8 American Gas Association, Annual meeting, Cleveland, Ohio.

6-10 35th National Safety Congress and Exposition, Chicago, Ill.

9-10 Transmission and Distribution Committee, EEI, Benjamin Franklin Hotel, Philadelphia, Pa.

15-18 American Society of Civil Engineers, Fall Meeting, New Orleans, La.

27-30 National Electrical Manufacturers Association, Hotel Traymore, Atlantic City, N. J.

29-31 Southeastern Electric Exchange, General Sales Conference, Atlanta Biltmore Hotel, Atlanta, Ga.

# EDISON ELECTRIC INSTITUTE OFFICERS AND COMMITTEES

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